SOUTH AUSTRALIA

ITS HISTORY, RESOURCES AND PRODUCTIONS

H. As. 1613



POST OFFICE AND TOWN HALL, ADELAIDE.

SOUTH AUSTRALIA:

ITS HISTORY, RESOURCES, AND PRODUCTIONS.

EDITED BY

WILLIAM HARCUS, Esq., J.P.

ILLUSTRATED FROM PHOTOGRAPHS TAKEN IN THE COLONY.

WITH MAPS.

PUBLISHED BY AUTHORITY OF THE GOVERNMENT OF SOUTH AUSTRALIA, AND DEDICATED (BY PERMISSION) TO HIS EXCELLENCY SIR ANTHONY MUSGRAVE, K.C.M.G., &c., GOVERNOR AND COMMANDER-IN-CHIEF OF THE COLONY.

LONDON:

SAMPSON LOW, MARSTON, SEARLE, & RIVINGTON,

CROWN BUILDINGS, 188 FLEET STREET.

1876.

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STAMFORD STREET AND CHARING CROSS.

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DEDICATION.

To His Excellency

SIR ANTHONY MUSGRAVE, K.C.M.G.,

Governor and Commander-in-Chief in and over Her Majesty's Province of South Australia and the Dependencies thereof, &c. &c. &c.

Sir,—The following work on the History, Resources, and Productions of South Australia has been prepared at the request of your Government, and is published in the hope that, by giving useful and accurate information on the Colony, its advantages as a home for intending emigrants from the Mother Country may be more fully made known.

I gladly avail myself of your Excellency's kind permission to dedicate the work to you. The interest with which you have watched the progress of the Colony during the years you have represented Her Majesty in this Province gives me the hope that your Excellency will regard a work of this kind as useful and well-timed in the present prosperous period of the Colony's History.

I have the honour to remain,

Sir,

Your Excellency's most humble and obedient servant,

WILLIAM HARCUS.

Hackney, *January* 1876.

PREFACE.

THIS volume on the History and Resources of the Colony of South Australia has been prepared at the request and is published by the authority of the Government.

The Commissioners appointed to collect specimens of our products and industries for the Philadelphia Centenary Exhibition suggested to the Government the advisableness of having a Handbook prepared to accompany them, indicating the subjects to be treated and the gentlemen who might be entrusted with their treatment. The Commissioners did me the honour to suggest that I should write that portion which refers to the General History, Government, and Laws of the Province. They mentioned Mr. Josiah Boothby, Under Secretary and Government Statist, for the Statistical portion; Dr. Schomburgk, the Director of the Botanic Gardens, for the Flora; Mr. F. G. Waterhouse, Curator of the Museum, for the Fauna and Mineralogy; and Mr. C. Todd, C.M.G., the Postmaster-General and Superintendent of Telegraphs, for the portion referring to the Meteorology and the Observatory.

The Government acceded to the request of the Commissioners, and they asked me to take the Editorship of the work, which I at once consented to do.

In the portion for which I am personally responsible I have aimed at historical accuracy, while giving a popular account of the progress and resources of the Province. How well my coadjutors have done their portion of the work will be seen by those who read the several sections.

In the chapter on the Northern Territory, I have incorporated some useful papers written by residents there, and pre-

pared for publication by Mr. J. G. Knight, one of the officers in the Territory.

The work is sent forth to the public with the hope that, by giving trustworthy information as to the history, progress, and resources of the Colony, it may direct greater attention than has yet been given to one of the largest, most prosperous, and most promising Colonies under the sway of Her Majesty the Queen of Great Britain and Ireland; and that it may be of service to persons in the old country who may be contemplating a residence in the fair Provinces of Australasia.

Three years ago I published, by request of the Government, a "Handbook for Emigrants," which has been largely distributed in the United Kingdom. So rapidly, however, is history made in a new Colony that some of the information given in that little work is already out of date. The present volume is more ambitious in its aim and more complete in its finish than the "Handbook" was.

I have been considerably indebted in preparing the volume to Mr. Anthony Forster's well-written and comprehensive work on South Australia, published in 1866; and I am pleased to acknowledge my obligations to a writer whose information is generally accurate and trustworthy.

Though the volume is published "By authority of the Government," I am responsible for its contents. The Ministry and the Officers in the various Departments of the Government Service have assisted me in every possible way, for which I give them my thanks. I am afraid I have tried the patience of some of them—especially that of the Government Printer.

W. H.

HACKNEY, SOUTH AUSTRALIA,
1876.

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SOUTH AUSTRALIA.

CHAPTER I.

INTRODUCTORY.

England a Colonizing Nation—Difficulties of Planting a Young Colony—Progress of South Australia.

THERE can hardly be a more interesting study for a thoughtful mind than to trace the progress of a young Colony from its early settlement until it obtains a position of something like settled stability which justifies the hope of future advancement. Amongst the Colonies and dependencies of Great Britain, we find many opportunities of tracing this gradual and steady growth. No modern nation has ever attained the art of successful colonizing as England has done. Other nations have tried it, but with very little success. Spain, Holland, and France have each in its turn attempted to form many offshoots from the parent stem; and though, in the beginning, Holland was moderately successful, she never learnt the art as it has been brought to its present high state of development by Great Britain. Spain won the New World, but failed in creating a second Spain in the far wilds of that wondrous land across the Atlantic. America owes its present greatness not to the blue blood of Spain, but to the energy, industry, and perseverance of the Anglo-Saxon race. A "Greater Britain" sprang from the loins of the Fatherland; and no Englishman can look upon the great people now constituting the American nation without pride, while recog-

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nizing in them many of the qualities which have grown up in the lapse of centuries in the Northern Island of the sea. France has also attempted the work of colonizing, but her Colonies have been military settlements, with but small power of attracting population. Algeria and New Caledonia come far short of an Englishman's idea of successful colonization.

To successfully plant a young Colony, and to carry it on through its earliest struggles and difficulties, seems to require special qualities, physical, moral, and intellectual, which are possessed in their highest form by the Anglo-Saxon people. It is a small matter to supplant the aboriginal inhabitants of a barbarous country and to secure possession of their land. The superiority which comes from civilization is soon acquired, and the feebler race bends before the stronger, as the reeds bend to the sweep of the winds. The difficulties of successful colonization arise from very different causes than the mere conquest of native races. It is in battling with nature, conquering the soil, holding on against capricious seasons, fighting with the elements and compelling the earth to yield what it never yielded before—a reward for man's toil—that the real triumphs of an old people in a new land are seen. The pioneers of civilization in every new country have to work on in the midst of untold difficulties and trials, which test courage, faith, and patience. A few, who are but ill-qualified for such a life, fall in the unequal strife, but the majority succeed. Steady perseverance, a brave courage, an unwavering faith in the virtue of hard work, and an undimmed hope in eventual success—these are the high qualities possessed by the hardy pioneers of civilization in new countries; and it is not too much to say that these are qualities which distinguish the British people, and which have made them the most successful colonizers the world has ever seen. Of course, the hard work is done at first. Some labour that others may enter into the results of their labour. As the stability of the building depends on the foundation being well laid, as the fruit of the tree depends on the seed that is sown, so the future of a new

Colony depends greatly on the character of those who were the first to make their homes in the wilderness, to break up the virgin soil, and to subdue the earth. The character of the Pilgrim Fathers—brave men fleeing from persecution, and preferring civil and religious liberty in the desert to bondage in the city—impressed itself on the States of New England. That character has been modified by time and surrounding circumstances, but in its root-power it is still there. The same thing is witnessed in these southern Colonies of the British Empire.

I propose to give some account of one of these young Colonies, which has been planted and has grown to its present dimensions within the memory of men now living, and who had much to do with its earliest history. The Colony of South Australia is not yet forty years old; it has a population of not more than 210,000, and yet it has done a brave work in the interests of humanity, and already possesses a history of which neither we nor those who established it need be ashamed, as I shall endeavour to show in this brief sketch. As a social question, having relation to the progress and welfare of civilized states, the story of this young Colony's history is worth telling. I want the reader of this work to see how a prosperous community, having within itself all the elements of future development and national greatness, has grown up within a generation from very small beginnings, how much of this is owing to natural advantages, and how much to the energy, enterprise, and persevering industry of the early pioneers. We have tried, and not unsuccessfully, the experiment of establishing a free Colony on a free soil, where liberty may flourish without running into licentiousness where the daring expansiveness of the energetic present has not broken away altogether from the wholesome traditions of the past, where the freest of the free political and religious institutions may flourish harmoniously with a profound regard for, and attachment to, the old monarchical institutions with which we were familiar in the days of our childhood. I think I shall be able to show that this experiment has been to a large

extent a successful one. We have shown how the broadest form of political liberty can be enjoyed without lawless excess, how religion can be preserved without a State Church, and how the government of the people can be carried on by the people without losing our attachment to the Throne and Person of our Queen.

CHAPTER II.

EXTENT OF THE COUNTRY.

Continent of Australia—Extent of Territory—Number of Colonies—People—British, Irish, Teutonic—Extent of South Australia in Square Miles—Three Divisions—South Australia Proper, Central Australia, and Northern Territory.

THE vast Island Continent of Australia, formerly known as New Holland, comprises somewhere about 3,000,000 square miles of territory—only a little less than the territory of the whole of Europe. It is at present divided into five Provinces—New South Wales, Victoria, South Australia, Queensland, and Western Australia, with an aggregate population now approaching two millions of souls. It is one of the richest countries in the world; and the settlers, principally British, Irish, and Teutonic, have shown all the high qualities of courage, perseverance, industry, and hopefulness which characterize the race from which they spring.

South Australia is neither the oldest nor the youngest of the Australian sisterhood of Colonies. It was founded in the year 1836, and several of the first colonists still remain to see the results of their early labours. As originally settled, the Colony contained 383,328 square miles, or 245,329,920 acres; but since then it has received two large accessions of territory—the first, a strip of land lying between its western boundary and the eastern boundary of Western Australia; and the second, a large tract of country stretching northwards from the 26th parallel of south latitude to the Indian Ocean, and from the 129th to the 138th degrees of east longitude. The first addition was known as "No Man's Land," and the

second is now known as the Northern Territory. The Colony may be regarded as comprising three divisions—South Australia proper, Central Australia, and the Northern Territory—and it stretches across the whole continent from the Southern Ocean to the Indian Ocean—the total area comprising 914,730 square miles, or 585,427,200 acres.

CHAPTER III.

THE FATHERS AND FOUNDERS OF THE COLONY.

Origin of the Colony—The Wakefield System—Combination of Capital and Labour—The South Australian Association—The Act—Principles on which the Colony was Established—To be no Charge on the Mother Country — No State Church — No Convicts — Family Emigration—Mr. G. F. Angas.

THE settlement of South Australia as a separate and distinct Colony originated with a few gentlemen in London. Negotiations were opened with the Imperial Government in 1831 with a view to obtaining a charter giving certain concessions to the projectors. Possibly from the affair not being in proper hands in the first instance, the negotiations came to nought. They were resumed in 1834, when a meeting was held in Exeter Hall for discussing the principles on which the new Colony was to be established. Mr. Edward Gibbon Wakefield, an advanced political economist for those days, had thought out a system of colonization, which he maintained was the only true system possessing the elements of stability and success. His system was based on two principles: in all cases to sell the land for a fair and reasonable value, and to devote the proceeds to the introduction of labour from the Mother Country. He maintained that the worst thing that could happen to a new country was to give the land away in large blocks; and he found a striking illustration of this in the history of Western Australia. Grants of land of 20,000 or 50,000 acres had been made to favoured individuals, but they had turned out to be utterly worthless. The "fathers and founders" of the Colony of South Australia

resolved to start it on the principles laid down by Mr. Wakefield, and Colonel Torrens in his speech at the Exeter Hall meeting entered into an elaborate exposition and defence of the Wakefield system. Referring to Western Australia, the gallant Colonel said:—"What has been the fate of the Swan River Colony? We have seen that the combination in the Australian Colonies, and in Sydney and Van Diemen's Land, caused them to flourish; but there were no convicts sent out to Swan River, and the principle of combining labour was there abandoned. Numerous grants were made; a single individual had 50,000 acres; one person, I believe, had 500,000. These immense tracts separated the people, so that they could not communicate at all. They were so severed that, instead of being able to assist each other, though they were famishing, they could not pass through the unreclaimed lands to tell their state of destitution. Capital was sent there, but it was unproductive. Labourers were sent there; some of these died from want, and the others went to Van Diemen's Land. Out of four thousand persons only fifteen hundred remain."

Now, the object of the originators of this Colony of South Australia was to combine labour and capital. They who had money were to emigrate by means of their own resources, purchase land in limited blocks, as far as possible within given areas, and the money received for the land was to be used in bringing out labour. By this means it was believed there would be a healthy combination of capital and labour, and the population would be concentrated within certain surveyed districts, where the early settlers would be able to help one another.

At the outset it was resolved that the price of land should be 12*s.* an acre, to be increased after a fixed time to £1 per acre. Men of means would bring out their money, purchase land on which they would settle, and with the money paid for it immigrants would be introduced into the new settlement, whose labour would be available for working the land and making it productive. These preliminary points being settled, an application was made to the Imperial Parliament for an Act, by an association of gentlemen calling themselves "The

South Australian Association." In August of 1834 the Act was passed. This Act defined the limits of the new Colony, gave power to persons approved by the Privy Council to frame laws, establish courts, appoint officers, chaplains, and clergymen of the Church of England or Scotland, and to levy duties and taxes. Three or four Commissioners were to be appointed by the Crown to carry the Act into execution. The lands of the Crown in the Colony were to be surveyed and open for purchase by British subjects, or let on rent for three years—the purchase-money and rent to be employed in conducting the emigration of poor persons from Great Britain or Ireland to the South Australian Province or Provinces.

The Act was favourable to the family emigration system—a clause expressly providing that "No person having a husband or wife, or a child or children, shall, by means of the emigration fund, obtain a passage to the Colony, unless the husband or wife, or the child or children, of such poor person shall be conveyed thither." The Commissioners were empowered to borrow £50,000 for emigration until the sale of lands enabled them to pay the cost of passages for the emigrants. For the cost of founding the Colony they were also empowered to borrow £200,000 on bonds, which were to be a charge on the future revenue. One clause deserves to be specially mentioned, because to it the Colony owes to a large extent the good order of its people and the security to life and property which have distinguished it from the very beginning. Clause 22 provides "That no person or persons convicted in any Court of Justice in Great Britain or Ireland, or elsewhere, shall at any time, or under any circumstances, be transported as a convict to any place within the limits hereinbefore described."

In the Colonies of New South Wales and Van Diemen's Land, and more recently in Western Australia, the taint of convictism seriously deteriorated the pure stream of social and moral health of the community. The evils of this system of letting the penal scum and felonry of Great Britain into these new lands was known to the founders of South Australia, who were not ignorant of the early social life of New South Wales

and Van Diemen's Land, and they resolved that from the first hour of its history the new Colony should be preserved from this fatal taint. The law has been carried out. Indeed no convicted felon from any part of the world, whose sentence has not expired, even though he may hold a ticket-of-leave, is allowed to live in South Australia. At the present time every passenger landing here from Western Australia, where transported convicts are still found, is obliged to show his official clearance before he is permitted to take up his residence in the Colony. Another clause in the Act provides that no part of the expense of founding and governing the Colony shall fall on the Mother Country; and another, that if at the end of ten years the population of the Colony shall be less than 20,000, the unsold lands shall revert to the Crown.

This Act was subsequently amended in certain particulars, especially repealing the authority given to the Commissioners to appoint officers, chaplains, and clergymen, and since then the State has had no connexion with any form of religion or church organization. The first Commissioners appointed were —Colonel Torrens (chairman), Messrs. George Fife Angas, Edward Barnard, William Hutt, J. G. Shaw Lefevre, W. A. Mackinnon, Sam. Mills, Jacob Montefiore, Geo. Palmer, Geo. Barnes, and Rowland Hill. The latter gentleman (afterwards Sir Rowland Hill, originator of the penny postal reform) subsequently became secretary to the Commissioners. Of the foundation principles on which South Australia was established, we may here mention these three:—That it was never to be a charge on the Mother Country; that there was to be no State Church recognized; and that the transported prisoners from Great Britain were never to be admitted to its shores. These three principles have been fully carried out. The Colony has been no expense to Great Britain; there is no State Church; and convicts, except those convicted in the Colony, are unknown.

The first Commissioners found considerable difficulty in starting their scheme, and at one time there was a danger of the thing falling through and becoming a grand failure. To prevent this, Mr. George Fife Angas, one of the Commissioners,

was largely instrumental in starting the South Australian Company, for the purchase of land and the settlement of a population on the land. Mr. Angas is one of the best and most useful colonists the Province has ever had. He devoted time and labour to the Colony when it needed the best assistance of its best friends. More than this, he risked to a large extent his considerable private means to give the Province a start on a safe footing. This venerable gentleman still lives amongst us, and he has the satisfaction of seeing the prosperity of the community which he did so much to aid at first. In that prosperity, as was fitting, Mr. Angas greatly shared; and now full of years, honours, and usefulness, he is spending the close of his days in the quietude of his beautiful Lindsay House, one of the loveliest spots in the whole Colony. Whenever the history of South Australia is written, the name of George Fife Angas must occupy a prominent position in its records.

CHAPTER IV.

PIONEERS.

Governors—Sir John Hindmarsh, Colonel Gawler, Sir George Grey, Colonel Robe, Sir Henry Young, Sir R. G. MacDonnell, Sir Dominic Daly, Sir James Fergusson, Baronet, Sir Anthony Musgrave — The Administration of each Governor.

THE first Governor of South Australia was Captain (afterwards Sir John) Hindmarsh, who received his appointment early in 1836. Mr. James Hurtle Fisher (afterwards Sir James) was appointed Resident Commissioner for the sale of Crown Lands, and Colonel Light was appointed Surveyor-General. Colonel Light arrived at Kangaroo Island in August of that year, and on December 28, 1836, Governor Hindmarsh and his party landed at Holdfast Bay from the *Buffalo*, and under a venerable gum tree, a short distance from the shore, the Members of the Council and other officers were collected, and the Orders in Council creating South Australia a British Colony, and the Commission of Governor Hindmarsh, were read. This is our commemoration day; and on the 28th of December every year very large crowds of persons, from various parts of the Colony, assemble at Glenelg—a marine township which has sprung up in Holdfast Bay—to celebrate the foundation of the Colony.

When the official party arrived, there were considerable disputes as to the site of the capital city. Colonel Light from the first fixed upon the spot where the City of Adelaide now stands; although an influential party were in favour of Encounter Bay, outside the Gulf of St. Vincent. Happily the Surveyor-General carried his point, and subsequent experience



GOVERNMENT HOUSE AND GROUNDS, ADELAIDE.

has shown that he was right, as I shall prove when I refer more at length to the metropolis.

The dual government by Governor and Resident Commissioner, as might have been expected, did not work well, and grievous divisions soon occurred amongst the officials. After only fourteen months' term of office, Governor Hindmarsh was recalled, and was succeeded by Colonel Gawler, in whom the sole authority vested—the services of Mr. Fisher, as Resident Commissioner, being dispensed with. During Colonel Gawler's administration, the Colony passed through the greatest trials and difficulties it has had to encounter. Financial embarrassments—the results of folly and extravagance—threatened and almost accomplished the complete destruction of the settlement. Money was scarce, and labour, which ought to have been productively employed in developing the resources of the Colony, was concentrated in the city, where men, instead of producing something from the land, lived on each other. To save the Colony, Governor Gawler commenced extensive public works, to pay for which he drew upon the Lords of the Treasury, and had his bills returned to him dishonoured. This was not to be wondered at, for, as we have seen, one principle on which the Colony was founded was that it was not to cost the Mother Country one penny. The money was subsequently advanced by the Imperial authorities as a loan, and the difficulty was tided over. Probably Governor Gawler did the best he could under the circumstances; but the Home Government were dissatisfied with his administration, and treated him in a somewhat scurvy manner. Captain George Grey, a young officer who had been exploring in Western Australia, on May 10, 1841, walked into Government House, and presented to Colonel Gawler a commission appointing him (Captain Grey) Governor of the Province in succession to Colonel Gawler.

However hard this might have been for Governor Gawler, there can be no doubt it was of great advantage to the Colony. Captain Grey began his administration by the display of those high qualities of prudence, firmness, and decision

which he subsequently exhibited at the Cape and in New Zealand. He commenced a policy of retrenchment, which, as a matter of course, exposed him to a great deal of obloquy and misrepresentation. The wages of those employed by the Government were cut down to the lowest point; and this forced the labour, which was far too much concentrated in the city, into the hands of private employers. The effect of this wholesome action was soon seen. Working men, who had been hanging about the city, went into the country, and the land was brought under cultivation. One important improvement in the government of the Colony was made at the time Captain Grey became Governor. The Commissioners were dispensed with, and the Home Government undertook the direct management of the Colony. A new direction was given to the industry of the colonists; and when they became convinced that their success lay in subduing the earth, in cultivating the soil, and in pastoral pursuits, a new impulse was given to their energies. The necessaries of life became cheap; and, although money was not over-plentiful, beef, mutton, and flour were cheap, and there was neither want nor complaining amongst the people. Governor Grey's administration will always be remembered with satisfaction and gratitude. He first inspired the people with a feeling of self-reliance, and taught them to live within their means.

He was succeeded by Colonel Robe, a man very different from Captain Grey. Governor Robe was a respectable, honourable, upright English Tory. All his prepossessions and traditions were on the side of authority, which his military training had deepened and intensified. He looked with something like contempt, which he took no pains to disguise, at the liberal tendencies of the handful of people he had been sent to govern in the Queen's name. He tried to govern by a small clique of men who had but little sympathy with the bulk of the colonists. The poor Governor lived in hot water during the whole of his administration. The colonists refused to be treated as children; and, as he did not respect their rights, they paid no attention to his feelings. He was very

weary of his office before he was relieved by the Home Government.

He was succeeded by Sir Henry Young, who was a different stamp of man altogether from his predecessor. He entered very heartily into all those schemes which were likely to assist in the government and development of the Colony. One of the most important events that took place in Governor Young's time was the opening of the River Murray for navigation. I shall have something to say of this noble river later on, and may only remark here that up to Sir Henry Young's time it had not been turned to any useful account. With properly constructed steamboats, the river can be navigated for something like 2000 miles; but unfortunately the outlet to the southern ocean is dangerous, and often impracticable. Besides assisting to open up the river, Sir Henry set his mind on establishing a great port near to its mouth. A large sum of money was uselessly wasted on this fruitless attempt; and the few stones which now lie at what was ambitiously called Port Elliot will remain a lasting monument to Governor Young's unwise zeal.

Sir Henry Young was succeeded by Sir Richard Graves MacDonnell; a man of very considerable ability and great energy of character. More than any Governor who had preceded him, he came into close contact with the colonists as a whole. He had a pleasant manner, considerable tact, and warm sympathy with all the interests of the Colony, public and private. He was exceedingly popular during the whole of his administration, and he left the Colony amidst the regrets of those who knew him. During his government, as I shall show more fully subsequently, Constitutional Government was established, with two branches of Legislature, both elective. During his administration the Colony made rapid strides of progress. The full energies of the people were brought out, and wisely directed towards objects of public usefulness. Our Railway system was greatly extended, the Electric Telegraph was established, and Exploration was pushed forward to a remarkable degree. New and valuable copper mines were discovered on Yorke's Peninsula, which now support a popula-

tion of some 20,000 persons, and farming operations were largely extended.

In March, 1862, Sir Richard was succeeded by Sir Dominic Daly, a man of great official experience, an excellent administrator, and a very popular Governor. He was a Roman Catholic; he kept his religious views to himself, and never obtruded them into the region of politics. He was accessible to all classes of the community, and identified himself with everything likely to promote the welfare of the colonists. He died in the Colony, and was deeply mourned by all classes, whose loving esteem he had won by his urbanity and quiet English hospitality. During his administration the Colony was visited by H.R.H. the Duke of Edinburgh, who, it is well known, formed a high opinion of the cheery and kind-hearted old gentleman.

During the interregnum between Sir Dominic's death and the arrival of his successor, the Right Honourable Sir James Fergusson, Bart., the Government was administered by Lieutenant-Colonel Hamley, who was the senior officer in command of Her Majesty's forces in the Colony at the time of Governor Daly's death. Sir James was appointed by the Conservative Government, in whose ranks he had held office as Under-Secretary for India and the Home Department. For several years, he represented Ayrshire in the House of Commons. Sir James was free and open-handed in his expenditure, and very liberal in all his personal dealings with the Colony. He is a man of very considerable ability, a clear thinker, and an effective speaker. Though, perhaps, his higher qualities were not recognized as they ought to have been, he was regarded as an intelligent and a high-minded gentleman, who maintained the dignity of his responsible position, and creditably represented Her Majesty by the liberal administration. The establishment of telegraphic communication between Australia and Europe was carried out during His Excellency's term of office: his efforts to aid in the accomplishment of this great work were fully recognized; and shortly after its completion he was promoted, by Mr. Gladstone, to the governorship of New

Zealand. Sir James suffered, while in Adelaide, a serious family affliction in the death of his wife, Lady Edith Ramsay, daughter of the late Marquis Dalhousie.

In the interval between the departure of Sir James and the arrival of his successor, the administration of affairs was in the hands of the Chief Justice, Sir R. D. Hanson, whose long residence in the Colony and thorough acquaintance with its public affairs and history eminently qualified him for the position he temporarily occupied. I may add that Mr. G. M. Stephen and the Honourable B. T. Finniss each discharged the duty of Acting Governor, at different times, under circumstances similar to those under which Sir R. D. Hanson acted.

The present Governor of the Colony is Sir Anthony Musgrave, K.C.M.G., about whom it would not be fitting that much should be said here. He is a quiet, scholarly gentleman, who does his work without ostentation; and those who are brought into close official contact with him speak highly of his urbanity and ability. We may state that the salary paid to the last three Governors has been £5000 a year, the Private Secretary receiving £500, and the Aide-de-Camp £150.

CHAPTER V.

PHYSICAL FEATURES OF THE COLONY.

Productions—Fruits and Flowers—Cereals—Climate favourable to Health—Rainfall.

I HAVE already stated that the total area of the Colony, stretching from ocean to ocean, comprises 914,730 square miles, or 585,427,200 acres. A country so large, covering so many square miles, has, as a matter of course, a great diversity in its physical features. Magnificent plains of agricultural land, mountain ranges, stretching for hundreds of miles, and often covered with large timber, chiefly eucalyptus, and lovely and enchanting valleys, through which in winter creeks—in some instances deserving the name of rivers—run. On the other hand, there are in several parts of the Colony long stretches of arid plains on which vegetation is stunted and cultivation difficult, if not impossible. On these plains, however, the greatest mineral wealth of the Province has been found, and there is every reason to believe that the earth is still full of riches, which only wait the employment of capital and labour to develop.

For many years, indeed ever since Stuart completed his journey across the continent, it was supposed that Central Australia, as a whole, was a wretched country, which could never be turned to any profitable account. One result, however, of the spirited enterprise of South Australia, in carrying a telegraph line from Port Augusta to Port Darwin, has been to prove that there is an immense territory fully capable of carrying large herds of horses and cattle; and already some spirited young men have gone out far beyond



FERN WATERFALL.

the formerly recognized frontier to commence pastoral pursuits, with every prospect of success.

The southern part of the Colony is wonderfully productive. The finest wheat ever grown in the world has been grown within a few miles of Adelaide. At international exhibitions, both in England and on the Continent, South Australian wheat obtained the gold medal for the finest exhibited by any country. But wheat is only a part of our produce. All the fruits that flourish in England will grow well in this Province. Apples, pears, almonds, cherries, strawberries, currants, raspberries, gooseberries, rhubarb, and filberts have been produced in the southern part of the Colony. But, in addition to these, we can grow in abundance those fruits which are only produced in hothouses in England. Grapes, peaches, apricots, nectarines, and figs grow in the open air with a small amount of culture. Oranges do wonderfully well in the Colony, with only a little care. I have seen whole acres of healthy orange trees laden to the very ground with the golden fruit. At the same time may be seen, on the same tree, the lovely orange blossom, the green fruit, and the oranges fully ripe. Some of the colonists have gone to great expense in the cultivation of the orange, and their labour and enterprise have been amply rewarded. All these fruits, which are luxuries to the poor—and even to a large section of the middle class—in England, are, during the season, the daily food of the poorest in South Australia. When the fruits are ripe, there are but few tables on which several pounds of grapes or dozens of peaches and apricots are not found. A dozen pounds of grapes can be bought in the market for sixpence, and a dozen peaches for threepence or fourpence. Another delicious luxury in hot weather is the water-melon, which grows freely, and is eaten with avidity to any extent—especially by children—without the slightest evil effect. It would do an Englishman's heart good to look upon the breakfast-table of a South Australian of moderate means, groaning under the weight of the most luscious fruits.

In the northern part of the Colony tropical fruits can be produced to any extent, and tropical industries carried on with

suitable labour. The pine-apple and banana, amongst fruits, and the sugar-cane, the cotton plant, rice, tea, and coffee may all be produced there—in fact, all tropical products will flourish: and the time is not far distant when these industries will be cultivated to a large extent with the facilities which are now offered to settlers by the Government, and to which I shall refer at greater length by and by.

The climate of South Australia is, unquestionably, salubrious. For eight months in the year, nothing can be more delightful. During the summer months, from December to March, the heat is sometimes intense: on many days the thermometer registers from 105° to 110° in the shade. But the heat is *dry*, and therefore does not produce the same exhausting effect upon the colonists that a moist heat would do. On such days people wisely doff their woollen clothing, and dress all in white—even to their helmets and boots. Cases of sunstroke sometimes occur in spite of all precautions; but these are very rare compared with the large number of persons who, without due precaution, expose themselves to the fierce rays of the burning sun. As the result of experience and observation I can say that even on the hottest day men can follow their ordinary employments without excessive exhaustion: indeed, to be fully employed appears to be necessary to enable them to bear the great heat. On a very hot day, the worst thing is to lie kicking one's heels and doing nothing else. But a hot wind, attended with a dust-storm, such as we have twice or thrice during the hot season, cannot be apologized for—it is an unmitigated nuisance. These hot north winds, however, are happily rare, and they never continue more than a day or two. When the change comes, the temperature is sometimes lowered thirty or forty degrees in the course of an hour or two: and the unhappy wight who was melting in the morning may be shivering in the evening. This is what we have to expect occasionally in our hot months.

But nothing can be more delightful than the other eight months of the year. Even when the heavy winter rains come, which flood our streets and swell our rivers from contemptible

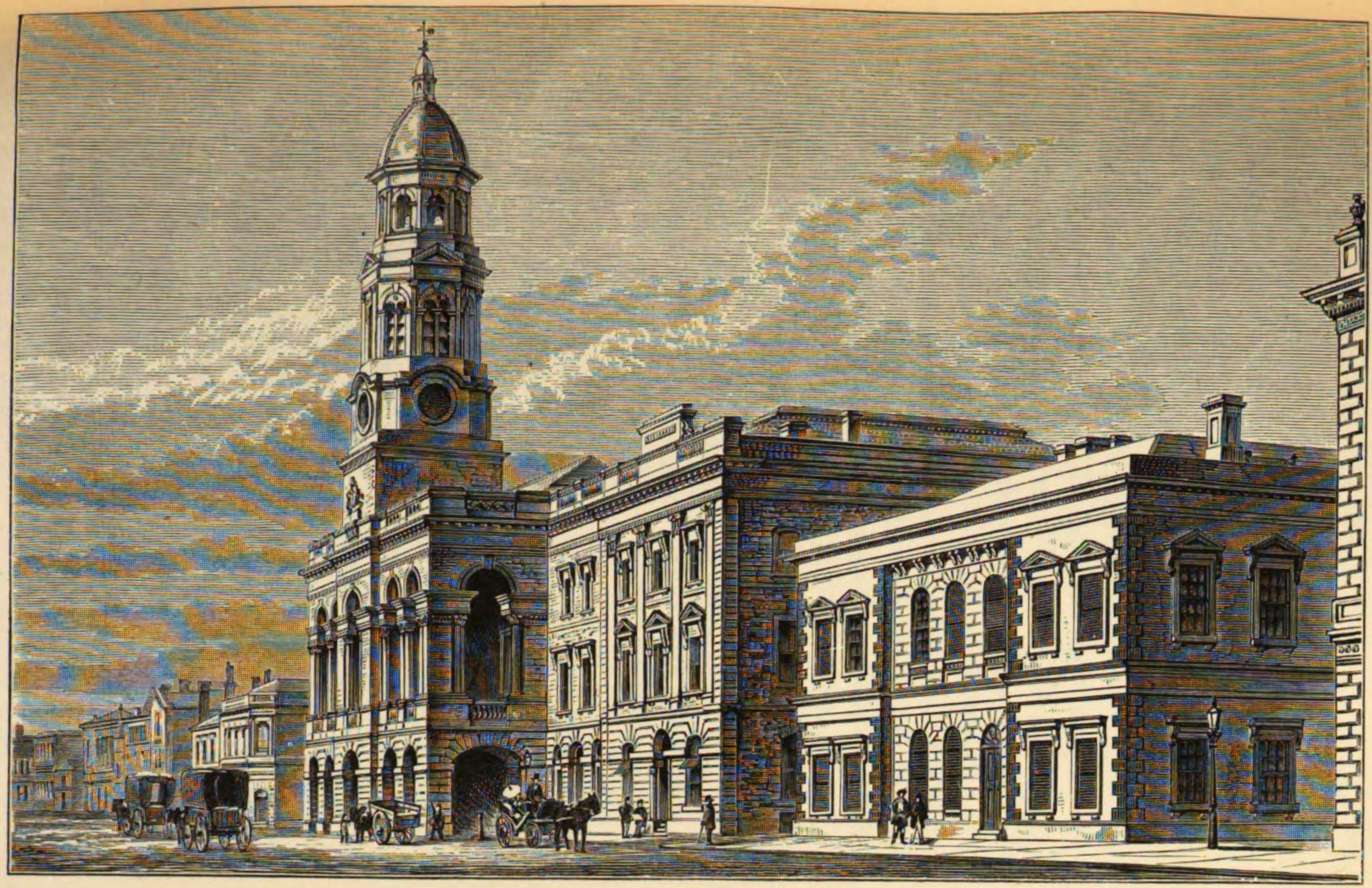
waterholes to mighty torrents, South Australians can afford to be jolly. In this Colony rain is always a blessing. It gives the promise, and is the cause, of future wealth; and the more rain we have, the more abundant is our agricultural and horticultural produce. The average rainfall at Adelaide is about twenty-one inches during the year, falling principally in the months of May to October, on about 110 days. In the hilly districts the fall is from eight to ten inches greater. In England the average is twenty-four inches. On the days during the months when it does not rain, the climate is unsurpassably beautiful; the air is pure, soft, balmy, and cool—such as one might imagine would blow over "the plains of heaven." On such days mere existence is enjoyment. And the climate has been found to be most beneficial in chest complaints with persons of tender lungs: medical testimony of the first class has shown that the Australian climate is quite equal, if not superior, to that of Madeira for persons with weak lungs. Several invalids have come to the Colony suffering from asthma, bronchial affections, and consumption, whose days have been lengthened, if their lives have not been ultimately saved, by the dry, pure, and salubrious atmosphere. Of course persons do die of consumption in South Australia; but this is generally when they arrive too late, the disease having taken too great a hold upon their system.

CHAPTER VI.

CENTRES OF POPULATION.

Adelaide the Metropolis—Site favourable—Handsome Streets and Buildings—Port Adelaide, Navigation of River—Shipping—Country Towns and Ports—Mining Townships.

THE City of Adelaide is the metropolis of the Colony; and, as I have stated before, the site was selected and the city laid out by Colonel Light, the first Surveyor-General. It is situated a few miles inland from the shores of St. Vincent's Gulf, discovered by Lieutenant Matthew Flinders in the early part of the present century, which is divided from Spencer's Gulf by a narrow tongue of land running from the north to within a few miles of Kangaroo Island. This slip of land is called Yorke's Peninsula, on which the world-famous Wallaroo and Moonta Copper Mines were discovered some fifteen years ago. A few miles to the north of Holdfast Bay there is an arm of the sea which runs inland for ten or twelve miles, on which the principal port of the Colony, Port Adelaide, stands. Eight miles from the Port is the City of Adelaide. It lies on a fine plain about five miles below the picturesque hills known as the Mount Lofty Range—the Mount itself being 2300 feet high, and a conspicuous object from the Gulf and from the surrounding country. Adelaide is divided into two parts—north and south—by the River Torrens, which is spanned by two or three substantial bridges. The main traffic, however, is over what is called the City Bridge, which has been found too limited in size for the demands made upon it. A new and much larger one will shortly be erected on the site it now occupies. South Adelaide is at present the skeleton of a large



TOWN HALL, ADELAIDE.

and imposing city, though the vacant streets are filling up very fast, and but for the high price of building labour it would grow much faster. The city is about one mile and one-third one way, and something less than a mile the other. Three sides form straight lines, and are called North, South, and West-terraces; the fourth, East-terrace, is irregular in its shape. The streets are all laid out at right angles—following the points of the compass. The city is surrounded by a belt of land about half a mile wide, which is called Park Lands; and the fine open space thus secured outside the city is favourable for health. The citizens are allowed, for a small consideration, to depasture cattle on these Park Lands; and on the eastern side lies the old Adelaide racecourse, which, however, is to be partly abandoned for a new one near to Glenelg, and on the line of railway. In South Adelaide there are five squares, the principal one being in the centre of the city, neatly planted with flowers and ornamental shrubs. This is situated between the Treasury Buildings and the Courts of Law, and a vast number of pedestrians pass through it every day.

Some of the streets in South Adelaide are very handsome. King William-street, which runs from north to south, bisects the city in its centre, and is one of the handsomest streets in the Southern Hemisphere. Here are found the Government Offices—a fine substantial pile of buildings, forming a solid block which covers a large area. This block contains the Treasury, the offices of the Chief Secretary, and Public Works offices; the offices belonging to the Crown Lands Department, the Education Department, and the offices appropriated to the Governor, in which he holds his Executive Council meetings. Adjoining the Government buildings stands the handsome Town Hall, belonging to the City Council, with a lofty tower of considerable architectural beauty. On the opposite side of the street is the Post Office, also a fine building with a lofty tower, which accommodates both the Post Office and the Telegraph Departments. The Town Hall and Post Office are built of a fine white freestone, found in valuable quarries about fifteen miles from the city. In the same street there are

other imposing structures—including the Eagle Chambers, the offices of the *Advertiser*, *Chronicle*, and *Express* newspapers, the warehouses of Messrs. D. and W. Murray, the Bank of Australasia, the National Bank, and the Savings Bank—all buildings that would do credit to any city in the world. In another street the commodious premises of the *Register*, *Observer*, and *Journal* newspapers are situated. I may state that the principal business is carried on in South Adelaide—North Adelaide being a favourite place for merchants' and tradesmen's residences, for which the elevated situation makes it admirably suited.

Amongst the most striking buildings in the city are the churches, some of which are very handsome, and have cost a large amount of money. A new cathedral, dedicated to St. Peter, is now in course of construction for the English Church. Only part of the original design is at present being carried out, at a cost of something like £14,000. When completed, it will be worthy of the large and influential body for whose use it is being erected. Hitherto that Church has been far behind some of the others in the character of their ecclesiastical architecture. St. Paul's and Christ Church are good-sized buildings, but they have little architectural display; while St. Luke's and St. John's are very humble in style. The Roman Catholics have one fine building—their cathedral church—dedicated to St. Francis Xavier. It is possessed of but little external ornament, but its proportions are fine and shapely; and when it is completed, by the erection of the tall and beautiful spire, which is part of the design, it will be a very imposing edifice. The Congregationalists, Baptists, Wesleyans, and Presbyterians have taken the lead in Church architecture—these bodies having several noble churches. The Stow Memorial Church and the North Adelaide Congregational Church are stately and costly buildings belonging to the Congregationalists, while the Hindmarsh Square Church, belonging to the same body, though somewhat vulgar in style, is nevertheless a large and commodious building. The Baptists have two fine buildings, one in North and the other in South Adelaide, each of which has been erected at a cost



ST. PETER'S CATHEDRAL, ADELAIDE.

of many thousands of pounds. The Wesleyans covet in their places of worship size, convenience, and comfort, rather than outer display; but some of their more recently erected churches are by no means deficient in architectural grace. They have several good buildings in Adelaide. There are three Presbyterian churches in the city, somewhat pretentious in style, and convenient and commodious for the purposes of worship.

Amongst the handsome private residences in the city the doctors have shown most taste. North-terrace is the site which they have selected as their local habitation, and something like half a dozen elegant houses have sprung up there within the last ten or twelve years—two of the handsomest recently. Taking the city altogether, and remembering that it is not forty years old, it will be admitted that it presents an exceedingly creditable appearance. Immediately around it and on its border line are some of our public benevolent institutions. The Destitute Asylum, the Lunatic Asylum, and the Public Hospital, are on North-terrace. There is a second Lunatic Asylum a little way out of the city, which is a striking building regarded from an architectural point of view. But the glory of Adelaide, and the pride of her citizens, is our beautiful Botanic Garden, which, under the magic wand of the accomplished Director, Dr. Richard Schomburgk, has grown into a thing of beauty which will be a joy for ever. We are a quiet undemonstrative people, not much given to what Mr. Anthony Trollope called "Australian blowing," but we do boast of our gardens; and if this be a weakness, it is one in which we are encouraged, if not justified, by all visitors who see them. They who have seen all the Botanic Gardens in the other Colonies without a moment's doubt or hesitation give the palm to ours. Dr. Schomburgk has the clear insight and creative power of a poet; and he has created a scene of beauty on which the eye can never feast itself sufficiently. When H.R.H. the Duke of Edinburgh was in Adelaide, he visited the Garden again and again, and always with increasing delight.

Immediately around Adelaide there are several towns and villages, the principal of which is Port Adelaide, to which I have already referred. Like other shipping towns, it has but

little that is picturesque or beautiful. Its origin was a swamp in a creek—a most unwholesome and unsavoury spot. But skill, enterprise, and money have made the port what it is. Like some of the towns of Holland, it has been literally built up out of the sea. Millions of tons of silt, obtained by dredging the river and the harbour, have been piled up on the old treacherous swamp. Huge sombre warehouses have been erected, where the merchants carry on their business. Substantial wharfs have been built at great cost along the shores of the creek, or, as it is now called, the river. Alongside these wharfs, three or four deep, lie every year magnificent vessels, whose crowded tapering masts look like a forest. The progress of the Colony has attracted a fleet of fine vessels to the Port, many of them equal in size and elegance to any vessels in any part of the world—from 1000 to 1700 tons register. Until within the last year or two, our exports have been chiefly copper and wool; but to these are now added wheat, tallow, preserved meats, and mimosa bark. The wool ships were long favourite vessels for passengers, the masters and owners laying themselves out for this branch of trade. Very many colonists go "Home," as the old country is still called, every year, and the captains of the clipper-ships who have been long in the service are as well known as any Adelaide merchant. The friendly terms on which the colonists are with many of these shipmasters makes a voyage home in one of their handsome ships something like a pleasure trip. The tonnage of vessels usually trading with Port Adelaide will be given elsewhere in this work; I need only say that a stranger would be greatly astonished to see what a large fleet of vessels is required to carry away the produce of 210,000 people, and to bring them those supplies from the old countries of Europe on which they are still to a large extent dependent.

The navigation of the river was much impeded by a bar of limestone crust about two miles long, which prevented vessels of deep draft from getting into the harbour. At a considerable expense this bar has been removed by dredges, to a width of 200 feet, along the whole two miles; and now vessels drawing nineteen or twenty feet can pass in and out. The Marine

Board, who have charge of the river and the Port, now propose dredging another 100 feet off the bar, which will give a channel of 300 feet clear. A little over a mile from the Port, on the beach of the open Gulf, is the Semaphore Station, where the pilot service is centred, and where the daily papers have the establishment of their Shipping Reporter. Outside the Semaphore Beach is the anchorage for vessels which arrive when the state of the tide will not allow them to pass up the river to the Port. They lie from three to five miles off, but constant communication with the shore is obtained by the fine boats and steam launches of Mr. Jagoe, the Shipping Reporter. There is now a proposition before Parliament to make an outside harbour, with a jetty and railway accommodation.

About six and a half miles from the city, in the opposite direction, is the watering-town of Glenelg, situated in Holdfast Bay, where the Colony was proclaimed in 1836. This is a pretty and convenient little town, with several handsome streets. It is always crowded with visitors during the summer season, and is now connected with the city by a light railway, having trains frequently running in the course of the day, so that hot and dusty citizens are constantly running down to the seaside for a breath of fresh air. Glenelg is the calling-place for the Peninsular and Oriental Company's mail steamers on their voyage both to and from Point de Galle. The steamers lie at anchor in the Gulf, about two miles from the jetty, and the mails and passengers are conveyed to and fro in a small steamer chartered for the purpose. About a couple of miles to the southward of Glenelg is the quiet and pleasant little town of Brighton, with seaside residences dotted about here and there. Should the railway be extended to Brighton, as has been proposed, it will become a favourite place of resort for the people of Adelaide. Several suburban townships and villages lie under the hills. The principal of these are Norwood and Kensington, Mitcham and Glen Osmond. These townships being very pleasantly situated, most of the handsome residences command a fine view of the waters of the Gulf—having for a background the Mount Lofty range of hills. Many of the suburban gardens are rich and beautiful, and vineyards and

orangeries abound. When the fruit trees are in bloom, or covered with the ripening fruit, they present a scene of rare beauty, while the air is fragrant with the mingled odours of "Araby the blest."

Several of the country towns have reached considerable dimensions, and are still growing in importance. Amongst these I may mention Gawler, Kapunda, Riverton, Clare, and the Burra to the north, which have been established for many years. But lying far away beyond these, on what are called the northern agricultural areas, important townships are springing up where five or six years ago the whole country was only a series of sheep runs and cattle stations. Amongst these I may mention George Town, James Town, Caltowie, Laura, Gladstone, and Port Pirie. Four years ago there was not a house at Port Pirie. Vessels loading wool lay off in the Gulf, and lighters came up the dirty choked-up creek and carried off a few bales at a time. Now Port Pirie is an important town, with streets laid out, handsome shops, commodious warehouses, seven wharfs, and a splendid steam flour-mill. A railway is now being constructed to connect the Port with the country inland, and it is hoped that the first section of this line will soon be open for traffic. At the head of St. Vincent's Gulf is Port Wakefield, with a railway running upwards of twenty miles inland, and at the head of Spencer's Gulf is Port Augusta, where several ships load wool every year for the English market.

Between the two Gulfs, as I have previously said, lies the great mining district of Yorke's Peninsula, and on it there are three fine townships, and a railway eighteen miles long. Port Wallaroo is a thriving place, with a considerable amount of shipping, and very large copper smelting works, which support many families. It contains some good and substantial buildings, and a jetty alongside which vessels of considerable tonnage can lie. Many of these are colliers constantly employed in carrying coal from Newcastle, New South Wales, for consumption in the Smelting Works. Kadina is six miles from Port Wallaroo, and is immediately contiguous to the famous Wallaroo Mines, which were first discovered in 1860.



BRIDGE OVER THE ONKAPARINGA, CLARENDON.

It too is a flourishing township. Twelve miles distant to the southward is Moonta, one of the richest copper mines ever worked in any part of the world. Here are two townships —what is called the mining township and the Government township, or Moonta proper. This is the largest and most important town on the Peninsula, and the largest place of worship in the Colony is a chapel recently erected for the use of the Wesleyan Methodists. Most of the miners are Cornishmen, who have a great attachment to the religious body founded by John Wesley. The southern portion of the Peninsula has been taken up for agricultural purposes, and a considerable population is settling there. They have already got one good port called Edithburgh; and it is proposed to establish a second, called Ardrossan.

To the east, south-east, and south of Adelaide, there are some important townships which have been long established, though they have not made so much progress as those in the north and on the Peninsula. Amongst these I may mention Woodside, Mount Barker, Strathalbyn, Goolwa, Port Elliot, and Port Victor. Farther to the south-east, approaching the border line between South Australia and Victoria, are the towns of Naracoorte, Penola, Mount Gambier, and Port MacDonnell, in addition to two other ports—Robe, in Guichen Bay, and Kingston, in Lacepede Bay. The country around Mount Gambier is wonderfully rich, and the land, because of its fruitfulness, has sold at high prices. Indeed this district has not inappropriately been called "The Garden of South Australia." In addition to these I may mention that there are a few German townships where our Teutonic fellow-colonists have settled, and where they follow various industrial pursuits with the perseverance and success which are characteristic of the country from which they spring. Hahndorf, Lobethal, and Tanunda are the chief of these German towns. The houses are built in the quaint, gable-roofed style which the Teutons so much affect, and present an exceedingly pleasant and picturesque appearance.

CHAPTER VII.

GOVERNMENT AND LAWS.

Three Estates—Governor, Legislative Council, House of Assembly—Early Government — First Constitution — Two Houses — Qualifications of Members and Electors — Manhood Suffrage — Ministry, Titles and Offices—Civil Service—Powers and Privileges of each House—Parliament Supreme — Liberal Constitution, worked well — Proceedings in Parliament—Governor follows advice of his Ministers.

THE Government of the Colony is to a certain extent after the model of the British Constitution. We have not exactly three Estates—Sovereign, Lords, and Commons—but we have the representative of the Sovereign and two Houses of Parliament —the Legislative Council and the House of Assembly. Both Houses are elective, but only the Assembly can be dissolved at the will of the Governor. Every four years one-third of the members of the Council retire, but they can offer themselves for re-election. I have already pointed out that in the beginning the management of the Colony's affairs was in the hands of a Board of Commissioners in London, who were represented here by a Resident Commissioner for Lands. The Act constituting the Colony provided that local government should be granted as soon as there was a population of 50,000 souls in the Province. I need hardly say that the attempt to govern the new settlement by a Board 16,000 miles away was a decided failure. Indeed, it was not possible that it could be a success. Communication between London and the Colony was infrequent and irregular; and it must be admitted that for a few years the outlook for the Province was a very dark one. Provoking misunderstandings and unseemly quarrels

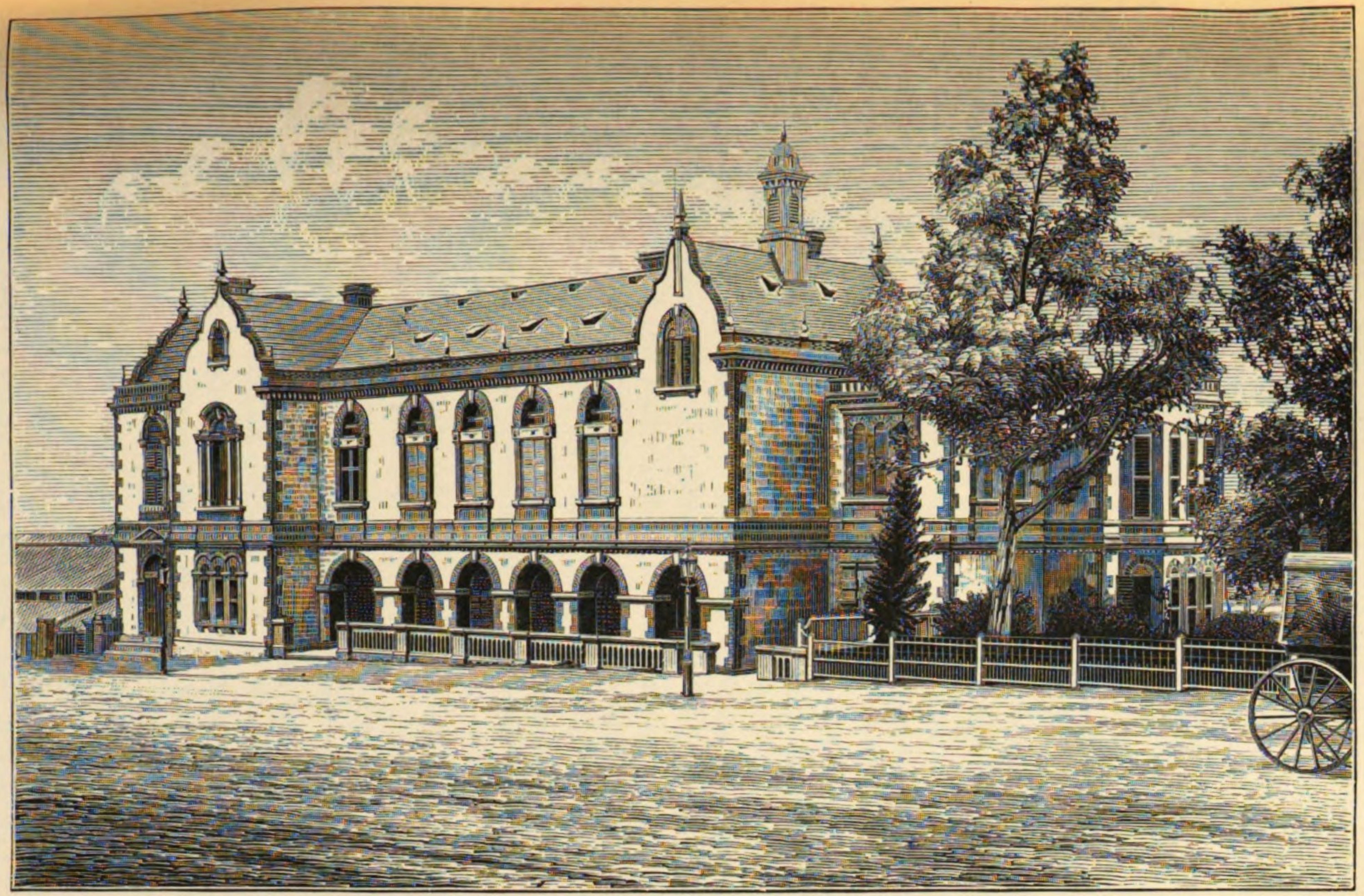
amongst the officers, which sometimes led to public scandals, were far too common. Until the year 1851 the Executive power vested with the Governor and a Council of eight, all appointed by the Governor—four of them being official and four non-official members. The official members were really paid officers in the Governor's department, and were directly responsible to him. The real power was in his hands—he possessed supreme control over the Crown lands, and he was immediately responsible only to the Imperial authorities.

In 1851, however, the first Constitution was granted to the Colony. An Act was passed authorizing the formation of a Legislative Council, consisting of twenty-four members, one-third of whom were to be nominated by the Governor, and the other two-thirds to be elected by the people. The qualification for members of the Council was a freehold property of the annual value of £200, or of the total value of £2000. Voters must possess a small property or house qualification, and a man could vote in as many separate districts as he had the qualification in. This Council had power to make laws for good government, but it could not touch the land. That remained under the personal control of the Governor. There can be no doubt that this first Council—partly elected and partly nominated—did a good work for the Colony during its existence. It made some mistakes, and squandered a good deal of money for unnecessary and useless purposes; but on the whole it deserved well of the Colony during the few years of its existence.

Very soon, however, the people began to agitate for fuller parliamentary representation and responsible government in its widest scope. The men who drew up the present Constitution Act held very liberal views in politics, and they went boldly for manhood suffrage, and vote by ballot. In England at that time such a suffrage was regarded as the wild dream of unpractical political Chartists and visionaries. There were a few of the old Tory school in this Colony who held very much the same view; and great and glorious battles were fought by the Liberals on one side and the Conservatives on the other, over the form which the infant constitution should assume. Hap-

pily for the Colony, however, the men of broad and liberal views were largely in the majority, and the present Constitution Act was passed. It has indeed been slightly modified in formal matters within the last year or two, but in its essential principles it is the same as that which received the Royal Assent in 1856.

The Act provided for two branches of Legislature—a Legislative Council and House of Assembly; the former to consist of eighteen members, and the latter of thirty-six. The Government is now vested in the Governor, representing the Throne, and the two Houses of Parliament. The Parliaments are triennial, with annual sessions, although in cases of emergency there may be more than one session in the year. The qualifications for a member of the Legislative Council are that he must be thirty years of age, and must have resided in the Colony three years. The electors for the Council must be twenty-one years of age, must have a freehold estate of the value of £50, or a leasehold of £20 annual value, having three years to run, or must occupy a dwelling-house of 25*l.* annual value. The whole Colony votes as one constituency for members of the Council—the elections for one-third of the number of members taking place every four years. In the case of the death or resignation of a member, and on the vacancy being declared by the House, a new election takes place. There are two admitted defects in the constitution of the Legislative Council which it is not easy to rectify. The first is, that in the event of their being pertinaciously obstructive to necessary legislation, there is no means of bringing public opinion to bear upon them—there is no power to dissolve the House, and send the Council as a whole to the constituency. In this respect their power is greater than that of the House of Lords. If that august body proves obstructive, the Sovereign, by the creation of new peers, can introduce fresh blood, and thus overcome the *vis inertiæ* of the obstructionists; but the Governor of this Colony cannot create new members. The second defect is the expense which must necessarily be incurred in filling up a vacancy. The cost of putting the whole electoral machinery throughout the Colony into operation for



PARLIAMENT HOUSE.

the election of a single member is very considerable. It has been proposed, in order to meet the first difficulty, that at every general election for the House of Assembly, one-third of the members of the Legislative Council should go to the constituency, so that public opinion on any question of special interest before the country might be brought to bear on the Council as well as on the Assembly. This proposal has not, however, been very cordially accepted. It is held that the object of a second Chamber is to be a check upon hasty legislation, and that it ought not to be amenable to public opinion, which on some occasions may be unwisely excited.

The House of Assembly, as at first constituted, consisted of thirty-six members, returned by seventeen districts—the City of Adelaide returning six, two districts one each, and the rest two each. The Electoral Act was subsequently amended, Adelaide being divided into two districts, and the Colony being re-arranged, so that there should be eighteen districts in all, each returning two members. It was found, however, after the lapse of a few years, that by the shifting of population and the opening out of new country for settlement, the old electoral divisions were very unequal; and in the Parliament of 1873 a new Electoral Act was passed, increasing the number of members of the Assembly from thirty-six to forty-six, with a new arrangement of the districts. The Parliament now sitting is the first elected under the new Act; and, so far, there is every reason to be satisfied with the Act.

The only qualification for an elector for the House of Assembly is that he shall be a British-born or naturalized subject of Her Majesty, of the age of twenty-one years, and that his name shall have been on the electoral roll of the district in which he votes for six months. Aliens can be naturalized by taking the oath of allegiance, and paying a fee of half a guinea, after which, when they have been on the roll six months, they are eligible to vote. The qualification for a member of the Assembly is the same as that for an elector. Any man qualified to elect is qualified to be elected, with two exceptions. According to the Constitution Act, Judges and Ministers of Religion of all sects cannot sit in either branch of

the Legislature. There are sound reasons for this restriction. It is always wise to keep the legislative and the judicial functions apart. The Judges are to interpret and administer the law, and not to make it. Nor would it increase the wise legislation of the Province to admit clergymen to the ranks of practical legislators. Indeed, we do not think that there are many clergymen who would care to leave their higher duties to come down and mingle in the ranks of those who fight the fierce political battles by which a young community pushes its way to national progress and success.

The Executive usually consists of the Governor and the six Responsible Ministers of State, the Chief Justice, Sir Richard Davies Hanson, who administered the Government as Acting Governor before Governor Musgrave arrived, being at present the only person in the Colony not a Minister who occupies a seat in the Executive Council. Formerly there were only five Ministers of State—the Chief Secretary, with a salary of £1300; the Attorney-General, £1000; the Treasurer, £900; the Commissioner of Crown Lands and Immigration, and the Commissioner of Public Works, £800 each. An Act recently passed, however, increased the number of Ministers to six, and fixed all the salaries at £1000 each. The Chief Secretary is the official medium of communication between the Ministry and the Governor on all departmental matters, and has official precedence in Executive Council and in all State ceremonies. Although, in England, the person whom the Queen sends for to form a Government is almost always the Premier, it often happens otherwise in South Australia. The gentleman forming the Ministry can select what office in the Ministry he thinks proper, and often elects not to be the head of the Government; but if a member of the Assembly, he usually, but not invariably, leads the House and represents the Government there. It is generally held that one of the Ministry ought to be a member of the Legislative Council, whatever office he may hold in the Government. At the present time the Chief Secretary is a member of the Council, and the Commissioner of Crown Lands and Immigration is the acknowledged Premier and leader of the Assembly. During the



GRENFELL STREET. (*'Register' Office.*)

last Administration the Chief Secretary was leader in the House of Assembly, and the Commissioner of Crown Lands and Immigration represented the Government in the Legislative Council. The offices at present held by the Ministers are —Chief Secretary, Attorney-General, Treasurer, Commissioner of Crown Lands and Immigration, Commissioner of Public Works, and Minister of Agriculture and Education. The titles of the first five are fixed by law, but that of the sixth Minister depends upon the Governor. At first the sixth Minister was called Minister of Justice and Education; at present he is called Minister of Agriculture and Education.

Each of these Ministers is at the head of a department, having a staff of officers under him, with a confidential Secretary, who is a permanent officer. The Chief Secretary has an Under-Secretary, the Attorney-General a Secretary, the Treasurer an Under-Treasurer, and the two Commissioners and Minister of Agriculture and Education each a Secretary. In addition to these Secretaries, the most important officers in the Civil Service are the Auditor-General, and the Postmaster-General, responsible to the Chief Secretary; the Engineer-in-Chief, responsible to the Commissioner of Public Works; the Surveyor-General, responsible to the Commissioner of Crown Lands and Immigration; the Crown Solicitor, responsible to the Attorney-General; and the President of the Marine Board, responsible to the Treasurer. The Agent-General in London is also responsible to the Treasurer.

The frequent changes of Ministries have been the subject of unfavourable remarks from those who are not intimately acquainted with the actual working of Constitutional Government in these Colonies. There is no doubt that there are blemishes in our political system, which sometimes lead to waste of time and neglect of public business. The real fact is, political parties in this colony are not strongly defined, and we have not yet reached the wholesome system of governing by party, which has worked so successfully in the old country. We have but few of those "burning questions" which so strongly divide parties at home. We have no ecclesiastical questions to trouble us, and no foreign relations to disturb us. There

is but little of what is known as loyalty to party. Any man who is strong enough to get a majority of members to join him on any question has no hesitation in turning out any Government in order that he may be "sent for" by the Governor to form a new administration. The result of this is that few Ministries remain in office more than about eighteen months or two years. Hence our frequent changes of Ministries.

The power of the two Houses of Parliament is co-ordinate in all respects but one, and that is an important one. According to the Constitution Act, the Bills for appropriating any part of the revenue, or for imposing taxation, must originate in the House of Assembly. The Assembly have given a wide interpretation to this clause, and claim for themselves the supreme control of the finances of the Colony. They deny the right of the Council to alter a Money Bill in any way, but claim that they must either approve it as it is or reject it altogether. The Council deny that they are prohibited from altering a Money Bill, so long as they do not interfere with those clauses providing for raising or appropriating money. The contentions between the two Houses on this point have frequently led to long and energetic discussions, and have sometimes threatened something like a dead-lock in legislation. Conferences between the Houses, however, and the exercise of good sense and a spirit of conciliation—a slight giving way on each side—have hitherto been sufficient to prevent differences reaching an extreme point. If a crisis of this kind were to arise, there can be no doubt that sooner or later the Legislative Council would have to give way. All the traditions of Constitutional Government in England, on which our system is based, and by which it is interpreted, go to show that the power of the purse must rest with that branch of the Legislature directly responsible to the country, and on which the voice of the country can be immediately brought to bear. I do not think, however, that there is much danger of a question of privilege being forced to its ultimate issue. The good sense of each House will prevent this. Difficulties will



ADVERTISER BUILDINGS.

arise in the future as they have arisen in the past, but they will be tided over. The state machine may jar and creak occasionally, but a little common-sense oil to lubricate the frictional parts will soon make it run smooth again.

The power of the Parliament in the Colony is as nearly as possible absolute. It is true that the Governor represents the Imperial authority, and that all Acts passed in the Colony have either to be assented to by him in the name of the Queen, or be sent home for the signification of Her Majesty's pleasure, before they can have the force of law. But the Imperial power of disallowance is very rarely exercised. Our Parliament is too wise to pass measures repugnant to the principles of Imperial legislation, and the practical result is that our legislation is not interfered with. We have successfully worked out the experiment of a wholesome democracy—the government of the people by the people—as nearly as possible to its ultimate issues. We hold that the people can govern themselves, and ought to govern themselves, without any foreign intervention whatever. The Imperial authorities tacitly acknowledge this, and practically leave us to manage our affairs in our own way, without anything approaching to irritating interference. There is no country in the world where more political freedom exists than in South Australia. The English Government have given us this great Colony to do the best we can with it—to people it and to develop its resources. We pay nothing to the Mother Country for the privileges we enjoy; all our public funds are spent in the Colony and for carrying on its advancement. The confidence reposed in us has not been misplaced. We have caused no anxiety to the Home Government, and that Government has exercised no arbitrary power over us. We are, as I have said before, a practical democracy, and yet there is not a more loyal people in the British Empire than we are. We are proud of our nationality and privileges as Britons—we are unwavering in our attachment to the Person and Throne of the Queen. We are as much interested in all that relates to Her, and to the safety, dignity, and progress of Great Britain, as the people who live in Middlesex or Yorkshire are. We

have always resented the representations made by a knot of fussy people in England, who have taken upon themselves to complain of the grievances of the Colonies, and to threaten the Home Government with their secession from British rule. We know little of these grievances; we seldom complain of ill-treatment, and we deprecate, as an insult to our inextinguishable loyalty, any hint that we wish to separate from the grand old country, of whose history we feel proud, and with which it is our highest boast to be identified. We have shown that the most liberal political institutions are not incompatible with the profoundest loyalty to the Queen and Government.

On the whole our liberal institutions have worked well. Good government has been carried out, and the country has made progress. Indeed the marvel is that our State Machine has worked so smoothly and successfully as it has. We have no professional legislators. The men who have been called to the Parliament are, for the most part, plain men, who know but little of politics as a science, and as a rule are but moderately educated. They are, I suppose, much on a par with the men who first assumed the Government of the United States, when they separated from the Mother Country. Some of our members have shown singular aptitude for political work, and have educated themselves up to a high state of efficiency and usefulness. Not a few of them are able speakers—strong in debate, and lucid in exposition. They have shown, too, a large amount of administrative power, as I shall show later on; they have brought out and put to the test of practical success laws which have excited the surprise and admiration of other nations, and have been imitated by them. But perhaps the one fact, which more than all others redounds to their credit, is, that during a Parliamentary Government of nearly twenty years no whisper of corruption has been breathed against a single member. It is said that democratic institutions necessarily lead to political corruption. I can only say that it has not been so in this Colony. Members have schemed, finessed, log-rolled, to serve their districts, but never to put money in their own pockets.

Indeed so jealously have they guarded the political business of the Parliament that, to avoid all suspicion of seeking their private ends, a majority has never been obtained large enough to vote for a moderate payment of members. We have members in very humble circumstances, who willingly devote their time and labour to the business of the country, without fee or reward, and not a breath of suspicion has been raised against their public honesty.

The order observed with respect to the introduction and passing of Bills through Parliament is the same as that which prevails in the Imperial Legislature. Where Bills touch the revenue, a message has to come down from the Governor, and leave to introduce this has to be obtained in committee of the House of Assembly. If leave is granted, the Bill is then presented and read a first time without discussion, the debate on the principles of the measure being reserved for a second reading. When the second reading is carried, the Speaker leaves the chair, and the House goes into committee for the consideration of the separate clauses; the Chairman of Committees taking the place of the Speaker. When the clauses have been carried, the House resumes, and the Chairman reports to the Speaker that the Bill has passed through committee. A day is then fixed for the adoption of the report, when a clean reprint of the Bill, certified by the Chairman of Committees, is placed in the hands of the Speaker, and either the report is adopted or the Bill is recommitted for further consideration. When the report is finally adopted, a day is fixed for the third reading, on which discussion is allowed, though, as a rule, the third reading is carried without debate. The Bill is then finally passed and sent up to the Legislative Council, where it is immediately read a first time. Its subsequent course through the Council is similar to that through the Assembly. At the end of the Session the Governor comes down to prorogue Parliament, and in the presence of the two Houses he assents to all Bills that have been passed, reserving such as he deems necessary for Her Majesty's pleasure.

On all general questions of public policy and administra-

tion the Governor follows the advice of his Responsible Ministers. If his opinion is at variance with theirs on any matter of importance, he can advise with them; but in the end he is bound to follow their advice, or, as a matter of course, they resign their positions, and the Governor has to find other advisers. There is a good reason for this. The Ministry, and not the Governor, are responsible to the Parliament and the country for their measures and administration. So well is this principle acknowledged that members are not allowed to refer in Parliament to the Governor in such a way as in the slightest manner to influence votes. In practical working the Governor invariably follows the advice of his Ministers, leaving them to justify to the House the advice they tender. There is one point on which the Governor is instructed by the Queen to exercise his own judgment, even though it be against the advice of his Ministers; that is in the exercise of the prerogative of pardon. When a man is found guilty of a capital offence, and sentenced to be hanged, the case is reviewed in Executive Council, and the Council are furnished with the advice of the Judge who tried the case. Ministers then express their opinion as to whether the law shall take its course, or whether there is any ground for mitigating the sentence. As a rule the Governor and his advisers agree on the matter; but in the event of a disagreement the Governor is authorized by his instructions to follow his own judgment, but in such a case he has immediately to report the whole of the circumstances, with the reasons which led him to differ from his advisers, to the Colonial Office in London. I am not aware that any difficulty of this kind has ever arisen between the Governor and his Ministers since the establishment of Constitutional Government in this Colony. When prisoners have obtained the royal clemency, it has been on the advice of Ministers.

The supreme authority is vested in the Parliament, and is exercised through the Executive. The Governor, like the Queen at home, has very little actual power in the government, though, if he be a wise man, he exerts very considerable influence both political and social. He is bound, however,

to follow the advice of his Ministers, or they resign, and a Governor who allowed his Ministers to resign for such a reason would have great difficulty in finding other gentlemen to take their places. No dead-lock of this kind has ever arisen, or is likely to arise, under the administration of such Governors as are sent out to these Colonies now.

CHAPTER VIII.

ELECTION OF MEMBERS.

Mode of Election for each House—The Ballot—Political Amenities.

OUR system of election is very simple, and eminently calculated to prevent political excitement and to maintain good order. It was not so in the beginning, for we brought with us the popular old English system of nomination on the hustings and open voting on the day of election. I need hardly say that, amongst a people springing from the British stock, we had at our elections a repetition of the scenes which used to make an English election such an amusing and a lively affair. Party feeling ran very high on the establishment of Representative Government. There was one question which more than any other sharply defined parties, and excited a good deal of political antagonism until it was finally settled; I mean the State Church question. I have already stated that one principle on which the Colony was founded was the entire separation of the Church from the State. When, however, Constitutional Government was established, a strong effort was made to obtain a modified form of State aid to churches. The most of the old colonists resisted this attempt, and they were bravely supported by many who had come to the Colony later on. The issue, however, became the battle cry at some of the early elections; and the scenes which took place were lively, if not somewhat rowdy. The supporters of the two parties were ranged on separate sides on the day of nomination; and when feeling rose high, sticks and stones were freely used instead of arguments. Not much



HINDLEY STREET, SOUTH CORNER, ADELAIDE.

mischief was done, however; and a few broken heads and bloody noses were all the scars of honour which excited voters bore from the field of battle.

But when written nominations of candidates were substituted for nominations on the hustings, and vote by ballot was substituted for open voting, the rowdy element at once disappeared from the elections, and everything became quiet and orderly. Indeed, the complaint now is that our elections are tame and lifeless to a fault, and that political apathy is in some respects worse than political excitement, even though attended with a few broken heads. Still, no one would like to go back to the old system.

In an election for the Legislative Council the candidates are nominated in writing by the Returning Officer for the Province (at present Mr. Sheriff Boothby), who, in a public meeting called for the purpose, reads out the names of the candidates with the names of their proposers and seconders. If there are more candidates than vacancies, which is usually the case, the proceedings are adjourned till a day named, when the election is to take place. Candidates are not allowed to address the electors within twenty-four hours of the beginning of the election. The Returning Officer for the Province has his deputies in every polling place to receive the votes. In the polling room there are several private booths, into which one elector only is allowed to pass at a time to record his vote. The elector enters a polling booth, and gives his name and residence to the clerk. If his name is on the roll, he obtains a voting paper containing the names of all the candidates in alphabetical order, opposite to which are squares—thus ☐. All he has to do is to place a cross *inside* the square opposite the names of the candidates for whom he wishes to record his vote—thus ☒. If a voter crosses more squares than there are vacancies, or places the cross *outside* the square, or places any other mark or writing on the voting paper except the cross inside the square, his paper is informal, and his vote is lost. The instructions are clear and simple enough, and yet at every election a considerable proportion of the papers are found on scrutiny to be informal, and are of course rejected. Some

enthusiastic electors sign their names to the paper, others draw lines through some of the names; others record their effusive political feeling by such remarks as "Jones is a duffer," or "Smith for ever." All such papers are incontinently condemned and rejected at the scrutiny, for the very obvious reason that the object of the ballot is to preserve absolute secrecy as to the manner in which any elector votes. The elector having obtained his voting paper, and his name having been ticked off on the roll, he retires into one of the private booths, where he finds a pencil, and there, in complete privacy, he puts his cross against the candidates he wishes to see returned. He then folds his paper and hands it to the Returning Officer, who in his presence, without opening it, places it in a locked box. The key of this box is held by the Returning Officer for the Province, who alone can open the box. When the voting paper has been placed in the box, the elector's duties are over. His vote is recorded, and the act is irrevocable. All these boxes are sealed by the Deputy Returning Officer and forwarded to Adelaide as soon as possible.

On the day appointed for the scrutiny the Returning Officer, attended by as many clerks as he requires, proceeds to open the boxes. Each candidate may be represented at the scrutiny by a person to whom he gives written authority to act on his behalf, but he cannot be present in person. His personal interference at an election ceases some hours before the voting begins, and he appears on the scene no more until the result of the election is publicly declared.

The scrutiny is a long and tedious affair, extending in the case of elections for the Legislative Council over several days. When the work is done, a day is appointed for the declaration of the poll, and the result is made known. The candidates present, successful and unsuccessful, then return thanks; a vote of thanks is moved to the Returning Officer, who responds; and three cheers for the Queen close the elections. The successful candidates are from that time, and during the period they are in the Council, entitled to the designation of "Honourable" within the Colony; and when the Governor

addresses the two Houses, he addresses them as "Honourable Gentlemen and Gentlemen."

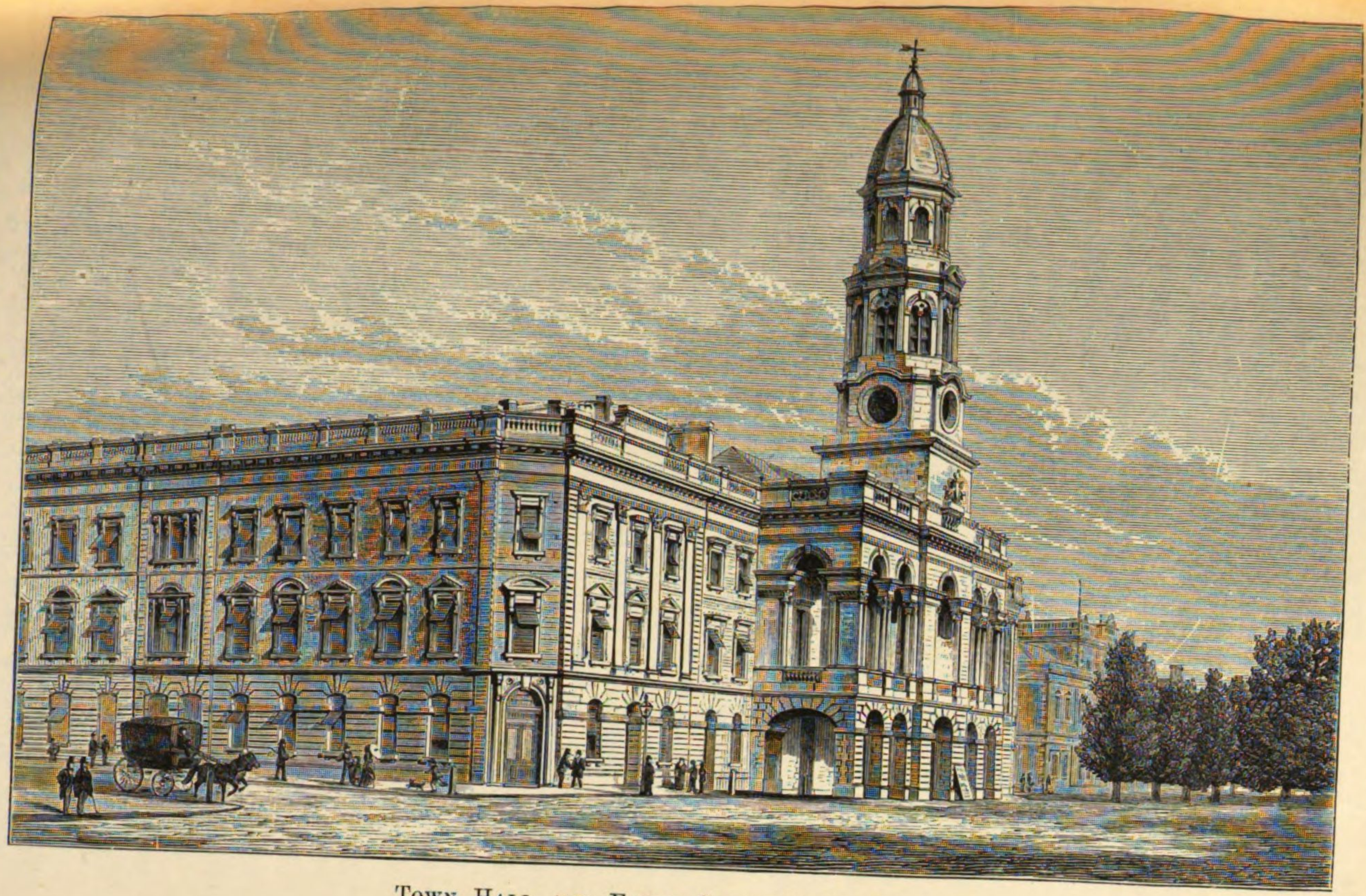
The order observed in the election of members for the Assembly is substantially the same as that I have described, except that the scrutiny takes place and the poll is declared at the head polling place in each district. It may be asked how candidates are brought into contact with the electors, so that they may have the opportunity of expounding their political sentiments. This is done before the day of nomination. Public meetings are held in the several districts, sometimes two of them in one day, when the candidates make their speeches, and are interrogated by the free and independent electors. Some of these meetings are racy enough, and are amongst the few excitements enjoyed by the people living in the remoter districts. As a rule candidates travel in company, and are on terms of perfect good humour and fellowship. They often ride in the same conveyances, stay at the same inns, eat at the same tables, and "shout" for each other and their friends in pleasant "nobblers." But, on the platform they speak of each other freely enough—pointing out each other's political sins and shortcomings in vigorous language, and chaffing each other unmercifully. It is, however, as a rule all done in a "Pickwickian" sense, and difference of opinion and keen political strife do not generally destroy personal friendship and good fellowship. The bitter rancour of political antagonism which is seen in some countries is comparatively unknown in South Australia. It is not that our public men do not feel strongly on political questions, but we are so closely mixed up in social and business life that we cannot afford to allow political asperities to pass beyond the region of politics. I have often seen two or more gladiators denouncing each other in the House in the strongest language allowed by rules of Parliamentary debates meet immediately after in the refreshment room, when one would smilingly say to the other, "Have a drink?" and the men who a few minutes ago were figuratively flying at each other's throats are hobnobbing like old friends, as they probably are. This is one of the pleasantest and most creditable features in a political life.

CHAPTER IX.

LOCAL GOVERNMENT.

Corporations and District Councils, Powers of each—Road Boards—Subsidizing Local Rates by Grants from Public Funds.

WE have two kinds of institutions for local self-government—Corporations and District Councils, and for the latter the Colony is indebted to Governor Sir Henry Young. Very early in the history of the Colony the City of Adelaide possessed a corporation for the control and management of municipal affairs. At first it was divided into councillors and aldermen—the mayor being chosen by the council as the chief magistrate. The corporation system was adopted by other centres of populations—the Adelaide model being followed. In 1862, however, a new Corporation Act was passed, which made two essential alterations; the office of alderman was abolished, and the mayor was to be elected by the whole body of ratepayers, and not by the council. The result of this has been that mayors are sometimes selected from members of the council, but more frequently from outside. District councils consist of bodies of men elected by the ratepayers living within a proclaimed district. They have charge of public matters within the district, more especially with district roads. These districts may be proclaimed on the memorial of a certain number of ratepayers, addressed to the Governor, and published in the *Gazette*. Counter memorials may be presented by those opposed to the establishment of a council in a given district. When a district council is formed, it is invested with power to levy a rate not exceeding

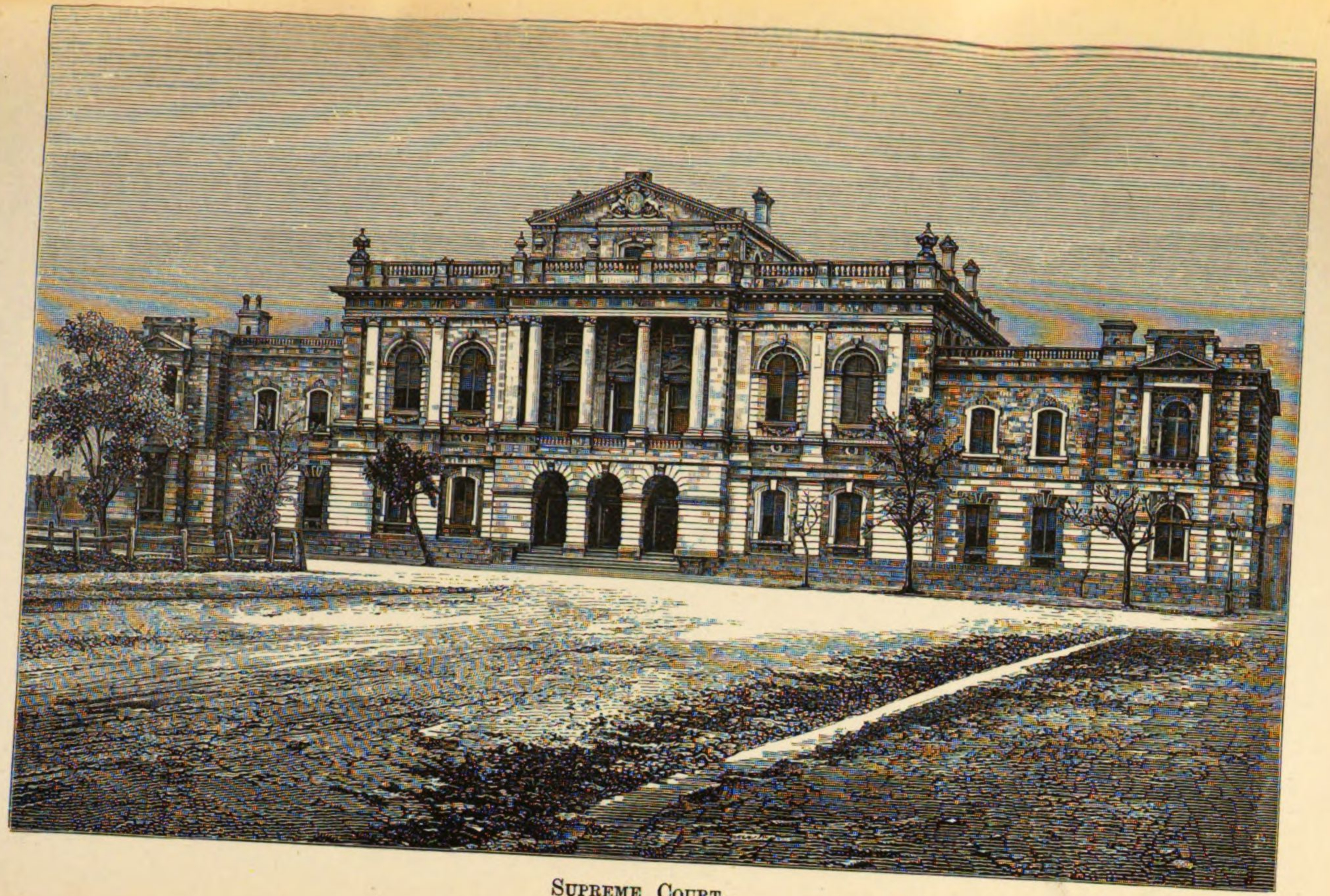


TOWN HALL AND EAGLE CHAMBERS, ADELAIDE.

one shilling in the pound on the assessed value of the property in the district. This amount is supplemented by an equal amount—pound for pound—from the public Treasury. They who tax themselves for roads and public works are assisted out of the general revenue. The same rule applies to corporations—the Government must have proof, however, that the money has been actually expended on such works before they grant the subsidy. The system has worked remarkably well. It has fostered the important principles of self-government, and has trained the people to help themselves if they would obtain help from the public funds of the Colony. The members of the Council are elected annually, and, on the whole, they do their work very well. There is a large number of these councils scattered all over the Colony, and they have exercised an important influence on the progress of the Province.

In addition to these district councils, who have charge of local roads, there are road boards, who have charge of what are called the main roads of the Colony, and who are supplied with funds to make and maintain in repair these trunk lines. In the first instance, there was only one central main road board, which had charge of all the main roads, and the members of which were appointed partly by the district councils, and partly nominated by the Government. This board has been of immense service to the Colony. The hundreds of miles of fine macadamized roads radiating in all directions from the metropolis, and extending for hundreds of miles, are the admiration of all strangers who visit South Australia. We owe these to the gratuitous labours of members of the Central Road Board, who have done their work well. As the Colony extended its settlement, however, the fact was realised that one board was not sufficient for the duties thrown upon it; therefore an Act which has recently passed, and which has just come into operation, has created several of these boards—the first members of which have been appointed by the Government. Provision is made for their future appointment by election. There is a growing feeling, however, that, wherever practicable, iron railways should take the place of macadamized

roads. The roads involve a continual annual expense for maintenance, which grows in proportion as the roads are extended. The railways, after a very short time, support themselves. I shall have something more to say on this subject when I come to deal with our railway system as it is, and as it is intended to be.



SUPREME COURT.



Bush Scene near Angaston.

thousands of acres are always open for selection, and the work of the surveyors is still going forward.

Price.—All waste lands, other than township and suburban, have a fixed value put upon them by the Commissioner of Crown Lands, not less than £1 per acre. In improved or reclaimed lands the cost per acre of the improvements and reclamation is added to the upset price of £1 per acre. Those lands which have been open for selection, or which have been offered at auction, and neither selected nor sold, may at the end of five years be offered for sale in blocks of not more than 3000 acres, on lease for ten years, at an annual rental of not less than 6*d.* per acre, with a right of purchase at any time during the currency of the lease at £1 per acre.

How to get on the Land.—When any lands are declared open for selection, by proclamation in the *Government Gazette*, at a fixed price, a day is appointed for receiving applications for sections, not to exceed in the aggregate 640 acres, or one square mile. The person making the application shall pay at the time a deposit of ten per cent. on the fixed price, which sum shall be taken as payment of three years' interest in advance upon the purchase money. If the price of the land is £100, the selector would have to pay a deposit of £10, which will be all he will be required to pay to the Government for three years—about three and three-quarters per cent. per annum. At the end of three years he will have to pay another ten per cent., which will also be received as interest for the next three years. If at the end of six years he is not prepared to pay the whole of the purchase money, he can obtain other four years' credit, on payment of half the purchase money, and interest in advance on the other half at the rate of four per cent. per annum. Lands which have been open for selection two years and not taken up may be purchased for cash. The scrub lands may also be taken up on very favourable terms, on long leases.

Occupation and Improvements.—A credit selector may reside on his land either personally or by substitute. The personal resident, however, has advantages which he who resides by deputy has not. In cases of simultaneous appli-

offered at auction and passed the hammer could be taken up at any time at one pound per acre.

Several attempts were made to alter the whole system of the land laws, which had been worked so as to benefit only a very small class of speculators at the expense of the agriculturists. The average price per acre which the Government had received for the large territory alienated from the Crown was under 25*s.*, but the price to the farmer, who had in many instances to purchase second-hand, was 50*s.* or 60*s.*, or more—the difference between the two prices going into the hands of the speculators, for the accommodation they gave to the agriculturists who had no money. Objectionable as the system was, it is only fair to say that many farmers have grown rich under it, and several speculators have done both themselves and the farmers good, by rendering assistance to poor men who wanted to get on the land.

It was felt, however, that the Government might do for moneyless farmers what the capitalists and speculators had been doing, and might do it on much more reasonable terms. Instead of demanding cash, it was resolved to sell the lands on credit, with deferred payments, taking sufficient precautions of course that the land so disposed of should be occupied and cultivated. After great consideration, a measure was at last carried through the Legislature for this purpose, and became law. It is not necessary that I should encumber these pages with a minute description of what is known as "Strangways's Act," which has been set aside for one more liberal, and better adapted to the requirements of poor men. It will be better to give a popular description of the law now in force, which will show intending immigrants how, on their arrival in this Colony, they can get possession of the land.

The Land Act of 1872.—Under this Act (amended in 1874) the whole of the Waste Lands of the Colony south of the 26th parallel of south latitude forms one area, from which, as fast as it is surveyed and declared open to the public, intending purchasers can make their selections. There is no selection before survey, but an efficient staff of survey officers is always at work surveying the land as fast as it is required. Hundreds of

CHAPTER XII.

THE LAND LAWS.

Upset Price of Land, One Pound per Acre — Division of Land into Hundreds — Original Land Laws — Cash Purchasers — Evils of Land Broking — Strangways's Act — Credit Selections — Surveys — Conditions of Present Land System — Success of System in Northern Areas — New Townships and Ports.

ONE principle on which South Australia was started as a Colony was the sale of the Crown lands at a price not under one pound per acre, the proceeds from the sale to be devoted to the introduction of immigrants.

This principle, however, was soon modified, and a large portion of the money obtained for the lands was devoted to the construction of roads and other public works, and subsequently to meeting the claims of the National Debt. The minimum price of one pound per acre has been strenuously adhered to. Waste lands, as the unsold Government lands are called, divided into Hundreds, and sub-divided into sections of about eighty acres each, were offered at auction at the upset price of one pound. Competition often ran up the price much beyond this amount, and hard-working farmers had but little chance in competition with mere speculators, who bought the land at a price which the farmer could not afford to give in cash, and subsequently let it to him at a good rental, with a right of purchase at twice or three times the amount of what it had originally cost. On the fall of the hammer, twenty per cent. of the purchase money had to be paid down, and the remainder in one month from the sale. Lands that had been

Though the farming is what would be called slovenly in England, yet as a whole, and over a series of years, it answers the purpose of the agriculturist. There are many farmers who have grown rich in this way. Beginning on a small scale, with a section or two of eighty acres, they have, from the profits of one year, enlarged their freeholdings for the next, until several of them now have very large and valuable estates, which yield them a handsome income.

From the table published above, it will be seen that the average price of wheat is low, and nothing could enable the farmer to thrive, with his comparatively small average per acre, and the low price at which he is compelled to sell, but the cheapness of production. The expense of cultivation is small, and the gathering in of the crop, when it is fully ripe, costs a mere trifle. The greatest invention ever produced for the agriculturists of South Australia is Ridley's reaping machine, which reaps and thrashes the wheat by one simple process. A machine of this kind could be used only where the climate is dry, and where the grain is allowed to ripen and harden in the ear. In some of the Australian Colonies the machine cannot be used, in consequence of the moisture in the air. In South Australia, however, as soon as the crop is fully ripe, the machine is put into the field, and the wheat is reaped and thrashed with amazing rapidity, and at a very small expenditure. It may safely be said that the cost of farming has been reduced to the minimum in South Australia.

It is curious to find that some of the most successful farmers are men who have been brought up to other trades. They seem to pick up the art and mystery of the business almost instinctively—proving clearly that in this Province no very great skill or experience is required to make a successful agriculturist. One result of this is, that there is a class of independent yeomanry settling on their own freehold lands, where they enjoy all the comforts of independence and abundance. Below I explain at length the provisions of the existing Land Acts, showing the easy terms on which any industrious man may get on the land, and, in the course of a few years, make it his own.



RUNDLE STREET, NORTH CORNER, ADELAIDE.

the country gratuitously, for which the social distinction conferred by the position is considered a sufficient reward.

The police force of the Colony is under the supreme control of a Commissioner, who has inspectors under him. The force is divided into two classes, mounted troopers and foot police. The pay of the troopers is higher than that of the ordinary constables, and the result is that the position is much sought after. They are a remarkably fine body of intelligent men—some of them being of good education and family. They are well mounted on valuable horses—Commissioner Hamilton taking great pride in his men and their horses. Something approaching to military discipline is maintained in the force. The uniform of the troopers is very handsome and imposing. Indeed, so struck was H.R.H. the Duke of Edinburgh with it that at his request a full suit was prepared for him to take home. The men are all supplied with swords and revolvers; and when on parade, they present a fine picture of athletic strength and careful drill. The bulk of the troopers are dispersed through the Colony—inspectors having charge of given districts.

The foot police, who are chiefly employed in the city, are also a fine body of men, though not equal to the troopers. They are under the immediate charge of the Metropolitan Inspector, who lays and conducts informations in the Police Court. A portion of the foot police, who have shown extra skill and intelligence, are told off for detective duty, and some of them have displayed considerable ingenuity in the detection of serious crimes. Indeed the whole force is a credit to the Colony. Their numbers seem very disportionate to the population, and especially to the wide area which they have to cover; but the community is a very orderly one, and needs but little police supervision or control.

We have no military or volunteer force in the Colony. For some years a company of regulars were kept here, and at one time the volunteer movement was taken up with great enthusiasm. The troops, however, were removed and the volunteers died out. There is at the present time a growing feeling in favour of reviving the volunteer force, and it is not at all im-

probable that it may be reorganized. Rifle clubs are kept up in some parts of the Colony for competition in rifle practice; and we have several very superior marksmen amongst us who would not be afraid to compete at Wimbledon if it were not so far away. In friendly competitions here some great scores have been made by our crack marksmen. It is felt that it is hardly creditable that a wealthy Colony like this should be absolutely without any defensive force at all. We have, however, amongst us a considerable number of young men who have been trained to the use of arms, and know something of drill; and, if the necessity should arise to organize a force, they would form a useful nucleus around which others could gather, and from whom they could learn something of soldiership. The present Government intend to give great prominence to drill in the New Education Regulations.



OULLINA GAP, NEAR ADELAIDE, SOUTH AUSTRALIA.

CHAPTER XI.

THE LAND.

Pastoral Pursuits — Squatter's Life—Wealthy Sheep-farmers, their Hospitality — Valuation and Assessment of Runs — Agriculture — First Attempts at Wheat Growing — Land Sold — Land under Cultivation — Table of Land Cultivated under Wheat, Yield in Bushels, and Average per Acre — Small Cost of Cultivating Wheat — Ridley's Reaping Machine.

PASTORAL PURSUITS.

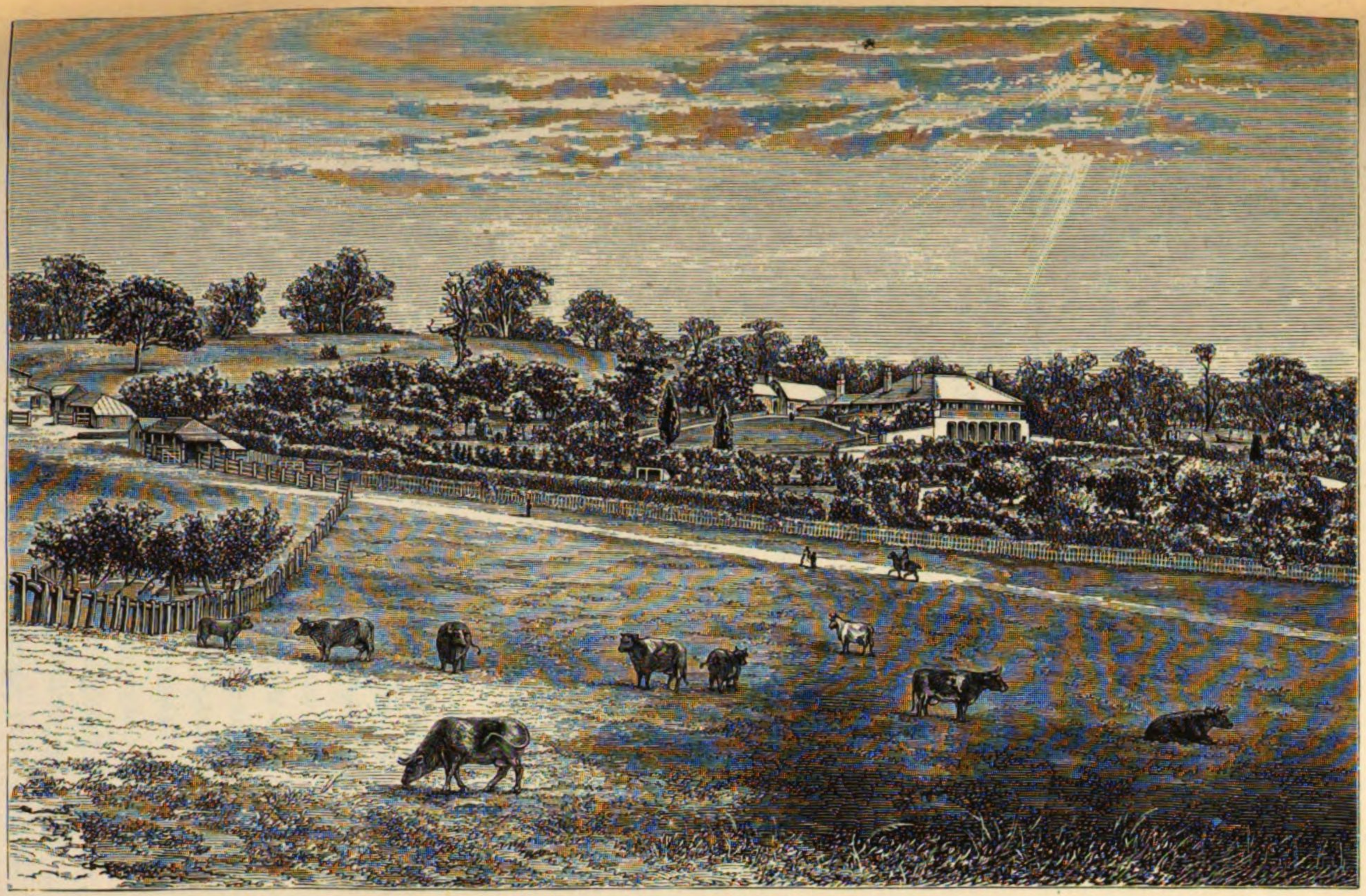
I HAVE already referred to the immense area of land now comprised in the Colony of South Australia. Sir Charles Wentworth Dilke, Baronet, in his "Greater Britain," describes it as "The widest of all the British Colonies, and nearly as large as English Hindostan." Very early in the history of the Colony land was taken up in what were then considered very remote districts for pastoral pursuits, including the breeding of sheep and cattle. The settlement of the country in this way was closely connected with that daring exploration for which the Colony has obtained a high and deserved reputation, as I shall show in a subsequent chapter on South Australian explorers and exploration. The beginning of this industry was very simple and unpretentious. Young men, with just capital sufficient to purchase a few hundreds or thousands of sheep, a dozen horses, a year or two's rations, and to hire a shepherd or two, sallied out into what was then a *terra incognita* to seek their fortune. They settled on suitable country, erected a rude hut, and thus laid the foundation of their fortunes. The life at first was a hard and rough one, involving many privations; but it was not altogether without its compensating pleasures. There was plenty of work, and that of itself keeps life

from stagnating. There was the pleasure of seeing the flocks and herds increase. The lambing season brings a pressure of work which requires the best energies of all hands on the station. Shearing too is always a scene of busy activity, and getting the wool to the market before roads were known taxed the ingenuity of the cleverest of the "squatters," as pastoral lessees of the Crown were early called, and the designation sticks to them to the present day, and will do so so long as pastoral pursuits are carried on.

The squatter's life in the beginning was not without a spice of danger, which required continual vigilance and activity to guard against, and a brave heart and a strong arm to meet when it actually came. In those days the natives were enemies not to be despised; and before they learnt to fear or trust the white man, they were not slow to resent his intrusion upon their hunting grounds. They plundered his huts, killed his sheep and cattle, and sometimes attacked himself or his shepherds. He had, therefore, to be always on the watch to protect himself and his property. The aborigines had been accustomed to kill for food all the indigenous animals found in their country: and it was hard to teach them that they had no right to touch the sheep and cattle of the squatter. They learned this in the end by a rough and bitter kind of experience; but in the early days of squatting they were a constant dread and annoyance to the settler.

As the flocks increased, the squatter had to push out into new country, and runs were extended farther and farther inland. Leases of wide stretches of country, comprehending in some cases hundreds of square miles, were granted on a mere nominal payment, and many of the squatters grew rich rapidly. All pastoral leases are held with the condition that whenever the land is required for agricultural purposes, the squatter must turn out on receiving six months' notice, he being paid for the substantial improvements made on his run. The squatter is therefore the pioneer of the agriculturist. When the land is wanted for agriculture, he has to retire farther into the interior.

Many of the wealthiest men in the Colony at the present



LINDSAY HOUSE, ANGASTON.

time, and several who have returned to spend their handsome fortunes and to end their days in the old country, began here in a very humble way. Some of them went out, as I have mentioned, with a few hundreds or thousands of sheep, and lived far from the abodes of men for years, and only occasionally visiting Adelaide to purchase rations or to dispose of their wool; and some did not even do that, but trusted all to agents in town. Others were only shepherds, and by saving their earnings—there were neither temptations nor means of spending them at first—they got a few sheep together, and were eventually enabled to take up a small run for themselves; and the first start made, in many cases success came rapidly. Shepherds who knew all about the management of sheep made good squatters; they went on increasing their flocks and taking up new country, and their wealth increased in geometrical ratio. They lived in the quietest possible way, spending but a mere fraction of their income. I could point to a score of such men who have made large fortunes, which they have well earned, and, having handed over the hard work of the station to their sons, have retired to enjoy their well-earned leisure and to spend their ample fortunes. As a class, they are honourable and kind-hearted men. A squatter's hospitality has become proverbial in Australia. Having had many opportunities of testing it in the far bush, I can speak from personal experience. The best the station affords—accommodation, food, and horses—are freely placed at the disposal of any one who knows how to behave himself. There are, of course, exceptions, and a churlish squatter may sometimes be met with, but very rarely. I have more than once been surprised and delighted to meet in some far-distant and out-of-the-way place an elegant and hospitable family—the sons manly and intelligent young fellows, and the daughters possessing the accomplishments of elegant young ladyhood, and a few other accomplishments which are only to be picked up in the bush, such as catching and saddling a half wild horse and joining in a kangaroo hunt on his back. This is not often the case, for young ladies' horses on a station are generally not as well broken as they are well ridden.

A few years ago the leases which the squatters had held on exceedingly low terms were subjected to a new valuation on their renewal. The Surveyor-General, Mr. G. W. Goyder, a highly competent man, was appointed valuator, and he performed this onerous and unpleasant duty with great impartiality. His work was a very important one, and required for its proper discharge not only high professional ability, but integrity and firmness of character; and these, it is admitted, Mr. Goyder possessed in an eminent degree. His largely increased valuations astonished some of the squatters, and made them indignant; but he was supported by public opinion throughout the Colony, and the result has shown that the poor oppressed squatters, as they represented themselves, were very well able to pay the increased assessment. Unfortunately for the squatters, but fortunately for the Government, the valuations were succeeded by two years of drought, which tried the lessees severely, and under which some of them fell poor and almost hopeless. Had the valuations been made during the years of drought, they would have been fixed much lower indeed than the actual value would have justified. Indignant as the squatters were, none of them were killed by the valuations. Some of them fell from the drought, but those who were able to live over the bad times became wealthier than ever. At the present time the pastoral interest is in a highly prosperous state. A subsequent part of this work gives the full statistics of this industry, from which it will be seen how wonderful has been the progress made by our "Shepherd Kings."

AGRICULTURE.

When the first colonists arrived, the country was parched up, the ground hard-baked and apparently unworkable. For some time the early settlers were content to sit down with the conviction that agriculture on such a soil, and with such a climate, was impossible. A great deal of suffering resulted from this false inference. The most important of all the necessaries of life had to be imported at a ruinous cost from Tasmania; and flour was actually sold in Adelaide at £100

per ton. Some daring colonists, however, thought they would honestly try whether wheat could not be produced on the Adelaide plains. The land was tilled, the seed deposited, and the result anxiously looked for. Happily, wheat-growing became a success from the beginning. Writing, as I do now, when the result of the last harvest enabled us to export something like 180,000 tons of breadstuffs, after supplying our own wants, it seems almost absurd to think that the early fathers and founders of the Colony should even have entertained a doubt as to the productiveness of the soil and climate. For a long time, agriculture was confined within a radius of say twenty miles of Adelaide, and persons "who ought to know" gravely asserted that beyond that radius agriculture was impossible. These persons, however, proved to be false prophets. During the last harvest, country 150 miles and more to the north of the metropolis has, without the cultivation necessary in England, produced splendid wheat, averaging from fifteen to eighteen bushels to the acre. And along the whole distance from Adelaide to these northern areas, the land is covered with industrious and prosperous farmers.

Up to the close of the year 1874 the total area of land alienated from the Crown amounted to 4,621,956 acres, 4,504,197 acres having been purchased in fee simple for cash, and 416,650 acres under the system of deferred payments—showing twenty-two and one-third acres per head of the population. Through the kindness of the Government Statist, I am able to bring down these figures to the present date. The total area alienated by cash sales is 4,319,102½ acres, for which has been realised £5,452,581 9*s.* 5*d.* Selections of land on credit have been made to the number of 2076, comprising an area of 714,232½ acres, the purchase-money of which amounted to £934,519 13*s.* At the close of the year there were 1,330,484 acres under cultivation, of which there were under wheat 839,638 acres. The climate is capricious for wheat, and the average yield per acre from year to year varies considerably. The plagues from which farmers suffer are drought, red rust, takeall, and, very rarely,

locusts. The following table gives for a series of years the number of acres under wheat, the produce in bushels, the average per acre, and the average price per bushel in Adelaide:—

Season.	Acres Cultivated.	Acres under Wheat.	Produce. Bushels.	Average per Acre. Bush. lbs.	Average Price. s. d.
1858–9 ..	264,452	188,703	2,109,544	11 11	—
1859–60 ..	361,884	218,216	2,103,411	9 38	—
1860–61 ..	428,816	273,672	3,576,593	13 4	—
1861–2 ..	486,667	310,636	3,410,756	10 59	—
1862–3 ..	494,511	320,160	3,841,824	12 0	4 10
1863–4 ..	555,968	335,758	4,691,919	14 0	7 10
1864–5 ..	587,775	390,836	4,252,949	11 0	8 7
1865–6 ..	660,569	410,603	3,587,800	8 44	6 2
1866–7 ..	739,714	457,628	6,561,451	14 20	4 5
1867–8 ..	810,734	550,456	2,579,879	4 20	7 1
1868–9 ..	808,234	533,035	5,173,970	9 42	5 0
1869–70 ..	850,576	532,135	3,052,320	5 45	5 3
1870–71 ..	959,006	604,761	6,961,164	11 30	5 0
1871–2 ..	1,044,656	692,508	3,967,069	4 20	5 6
1872–3 ..	1,164,846	759,811	8,735,912	11 30	5 5
1873–4 ..	1,225,073	784,784	6,178,816	7 52	5 7
1874–5 ..	1,330,484	839,638	9,862,693	11 45	—

A moderate estimate of £10 per ton gives £1,800,000 sterling as the result of the harvest, after supplying all local wants. This fact shows how important the agricultural interest is to the Colony generally. To this it must be added that South Australian wheat and flour are the finest produced in the world. This is seen by the fact that in London it brings the very highest price, and in the other Colonies it is bought to mix with their own cereal produce.

The cost of cultivating wheat in South Australia is very small compared with that of other countries. Anything like scientific farming is rarely, if ever, attempted in the Colony. The old saying, "Tickle the land with a hoe and it laughs with a harvest," is almost literally true here. Virgin soil is ploughed up three or four inches deep, and often, without even fallowing it, the seed is thrown in, and, should the season be moderately favourable, a fair crop rewards the small labour of the husbandman. This goes on from year to year—anything like a rotation of crops is never attempted. There are farms in South Australia which have been annually cropped with wheat for twenty or twenty-five years, and yet last harvest they produced as abundantly as ever.



Reaping on the Farm of Mr. John Rigg.

sider an inquest necessary. When an inquest is held, the Coroner takes down the evidence, and transmits it to the Attorney-General. Under the Act he has power to commit any person criminally implicated in the cause of a death, for trial either on the charge of murder or manslaughter; and, on his warrant, the person so implicated is committed to gaol to await his trial. He has the same power with reference to a person who has criminally caused a fire.

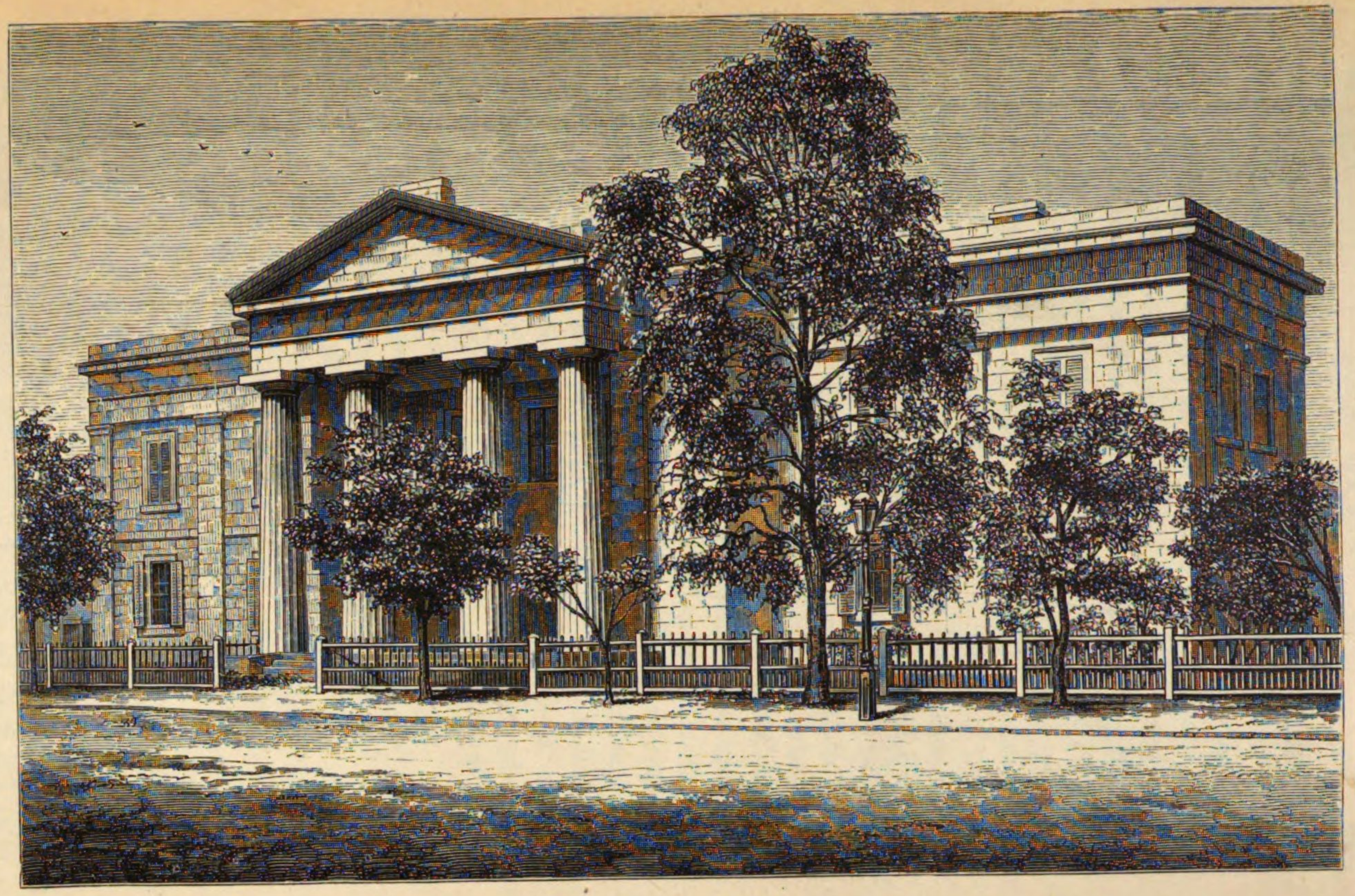
The Grand Jury system has long been abolished in the Colony, the Attorney-General now discharging the functions once resting with the jury. It is his business to carefully look through the depositions; and if, in his opinion, there is not sufficient ground for putting a person committed by a Magistrate or Coroner on his trial, he reports it to the Judge in Court, and the prisoner is discharged. I may state that the distinction between barristers and solicitors does not obtain in this Colony. Any lawyer can act in the double capacity. English barristers can act as solicitors, and Colonial solicitors as barristers. In legal firms a common rule is to have one member for the office work and another for court business—one to write and the other to talk. The men at the head of the bar at the present time are Colonially trained lawyers. None of the present Judges were English barristers: two were English attorneys, and one a Colonial practitioner.

A great deal of the magisterial business of the Colony is performed by unpaid Justices of the Peace, especially in the country districts. The Justices, as a rule, are men of sound sense, though making no pretension to superior education or technical legal knowledge. They principally deal with common offences, where they can hardly go wrong. For their general guidance a "Justice's Manual" has been prepared by the Government, and each Justice on his appointment receives a copy of this useful work. Unlike the county magistrates in England, they have no clerk to advise them, so that in the administration of the laws they are left solely to the exercise of their own judgment, which is generally sufficient to guide them to a fair and just decision on the cases on which they have to adjudicate. These gentlemen do a large amount of work for

class of Special Magistrates, as a whole, are men of considerable attainments, who bring great intelligence to bear on the discharge of their judicial functions. Cases of appeal from their decisions to the higher Courts are not frequent, and on the whole substantial justice is done. Still it is questionable whether it would be wise to trust them with enlarged jurisdiction. It would be better to have justice cheaply and quickly administered in the Supreme Court, by thoroughly qualified Judges, than to give much larger powers to the Local Courts as they are at present constituted.

In the City of Adelaide there is a Police Court, constituted under a special Act, and presided over by an able Magistrate. This Court sits from day to day, and deals with minor offences, such as are common enough in all centres of population, and dispenses summary justice on offenders. Serious crimes are investigated in this, as well as in the Magistrates' Courts in the country, and persons charged with such crimes are committed to take their trial in the Supreme Court of the Colony. In these preliminary investigations the evidence is recorded, and witnesses are bound over in their own recognizances to appear at the trial and to give evidence. The Police and other Magistrates are empowered to grant bail in certain classes of offences, and, if they decline to do so, an application can be made to a Judge in Chambers, who can grant it at his discretion.

There is no official Coroner in the Colony, though for many years there was such an officer for the City of Adelaide and its suburbs. All Justices of the Peace are, in virtue of their commission, Coroners, and any one of them can hold an inquest into the cause of death or fire on being moved thereto by the police. Indeed a Justice can, of his own authority, summon a jury and hold an inquest; but the rule is that, until a case of death or fire is reported to him by the police, he does not move. After investigating any case reported to him, he can, if he think proper, give a certificate to the police, a copy of which is transmitted to the Attorney-General, to the effect that having investigated the circumstances he does not con-



LOCAL COURT, ADELAIDE.

Bench is decidedly high, the whole of the Judges being men of eminent ability, in whose judgment and impartiality the highest confidence is placed. There is a Local Court of Appeals, consisting of the Governor and the Executive Council, except the Attorney-General. This Court rarely sits, but its simple machinery can be put in operation at any time. The highest Court of Appeal for the Colonies is the Judicial Committee of the Privy Council; and cases are frequently sent home on appeal to that Court. As in other civilized communities, we have sometimes to complain of the expensive delays in the Supreme Court; and to remedy this, it is proposed to adapt the English Judicature Act to this Colony—fusing law and equity; and doing what is necessary to cheapen and simplify legal proceedings.

We have also a Court of Insolvency, presided over by a highly competent legal gentleman, with a salary which has just been raised to £1200 per annum. In several districts of the Colony Local Courts are established, having both criminal and civil jurisdiction, and combining, to some extent, the English County Courts and the Recorders' Courts. These Courts are presided over by paid Special Magistrates, who, for the most part, are laymen, not technically learned in the law. These Local Courts can adjudicate on personal actions up to £100. A Special Magistrate and two Justices, or a Special Magistrate, with a jury of four, constitutes a Court of Full Jurisdiction. A Special Magistrate alone constitutes a Court of Limited Jurisdiction, and can hear and decide cases where the amount at issue is under £20. On its criminal side, a Court of Full Jurisdiction can hear and determine cases of felony and petty larceny, where the punishment does not exceed two years, or the fine does not exceed £100; and also misdemeanors and minor offences. Attempts have been made to enlarge the powers of Local Courts, where the procedure is very simple and inexpensive, but so far they have not been successful. It has been considered by some that it would be wiser to simplify and cheapen the procedure in the Supreme Court than to enlarge the jurisdiction of the Local Courts, which are presided over by non-professional gentlemen. The

CHAPTER X.

THE JUDICATURE.

Courts — Constitution of Supreme Court — Judges, their Duties and Salaries — Local Court of Appeals — Court of Insolvency — Local Courts — Police Court — Coroners — The Grand Jury — Justices of the Peace — Police — No Military or Volunteer Force — Rifle Clubs and Drill.

As a matter of course no community can exist without laws, and laws are of no use unless they are faithfully administered. Judicial officers for the administration of these laws were therefore very early appointed in the history of the Colony. We have several classes of courts, the highest of which is the Supreme Court of the Province. It possesses the powers of the Court of Queen's Bench, the Court of Common Pleas, and the Court of Exchequer, though these are modified to some extent to meet the special circumstances of the Colony. We have also a Court of Equity, answering as far as practicable to the Court of Chancery at home. The Supreme Court has Three Judges — a Chief Justice, and a Second and a Third Judge. In addition to his other duties, one of the Judges, at present the Second, has also to discharge the duties of the Judge-in-Equity. The Chief Justice is at present also Judge of the Vice-Admiralty Court, though his duties in this respect are by no means onerous. The salary of Chief Justice is £2000 a year, and the salaries of the Second and Third Judges £1700 a year. The duties of the present Second Judge are very much confined to the Court of Equity, though he sits in banco with the other Judges. The ordinary criminal and civil business is divided pretty equally between the Chief Justice and the Third Judge. The character of the

cations for the same block, the personal resident has the preference over the other; and at the end of five years, the selector who has resided on the land and made all the required improvements, and complied with all the conditions, may, by paying his purchase money, obtain the fee simple of his selection. The selector who occupies by substitute cannot get the freehold until the end of six years.

Purchasers upon credit will be required to reside, either personally or by deputy, upon the land at least nine months in the year; and absence for any longer time than three months in one year renders the agreement liable to forfeiture.

The credit purchaser will be required to make substantial improvements upon the land before the end of the second year, to the extent of 5*s.* per acre; before the end of the third year, 7*s.* 6*d.* per acre; before the end of the fourth year, 10*s.* per acre. "Such improvements to consist of all or any of the following, that is to say:—Erecting a dwelling-house or farm building, sinking wells, constructing water tanks or reservoirs, putting up fencing, draining, or clearing or grubbing the said land." The fences must be of a substantial character.

Cultivation.—The credit purchaser is required, during each year until the purchase money is paid off, to plough and have under cultivation at least one-fifth of the land; but in the event of his not cultivating this quantity during the first year, he will be required to cultivate two-fifths during the second year.

These are the principal provisions of the Land Act necessary to be known by persons wishing to settle upon the land on the most favourable terms. The land is cheap, the terms of payment are easy, and the amount of cultivation required not more than any man intending to farm would attempt if the matter were left to his own option.

This Act has worked with signal success, so far as regards placing people on the land; but it has been found defective in two or three points, which it was proposed to alter by fresh legislation during the late Session of Parliament. It has been found that 640 acres is not enough to enable a man to farm profitably, by uniting stock-keeping with wheat-growing, and

it was proposed to enlarge the area which one man may hold to 1000 acres. Then it has been found that the present system is not sufficient to prevent men "dummying" the land, that is, taking it up on credit under false pretences, and by using "dummy" selectors getting possession of more land than they are entitled to. The new Bill provided, under stringent means, for preventing and punishing those men who abuse their position and violate the law. But the most serious defect of all in the Act is what is known as "limited auction." It is provided in the Act that if two or more applications are made for the same block of land, it shall then be put up to auction at the price offered—the competition to be limited to the applicants who offered the same amount. This seemed a very fair arrangement to make, but in practice it has worked mischievously. In the heat of competition men have run up the price to an unreasonable amount, and the land has been taken at prices far beyond its actual value. It is not the policy of the Colony to make land too dear. The attracting of population and the settlement of an industrious population on the land are accounted of far more importance than getting high prices for it. The proposal in the new Bill was to make the ultimate price of all land sold on credit 1*l.* per acre. In the case of simultaneous applications for the same blocks, the competition would be on the annual rental, and not on the principal. As soon as the fact is known that there are two or more offering for the same block, each will be invited to write on a paper what rental per acre he is willing to give. If one offers 1*s.* 3*d.*, and the other 1*s.* 6*d.*, the latter will obtain the block. If, however, they should again offer the same amount, the matter will be decided by lot. The Bill, however, proposing these amendments has not been carried, and the land law remains as it was.

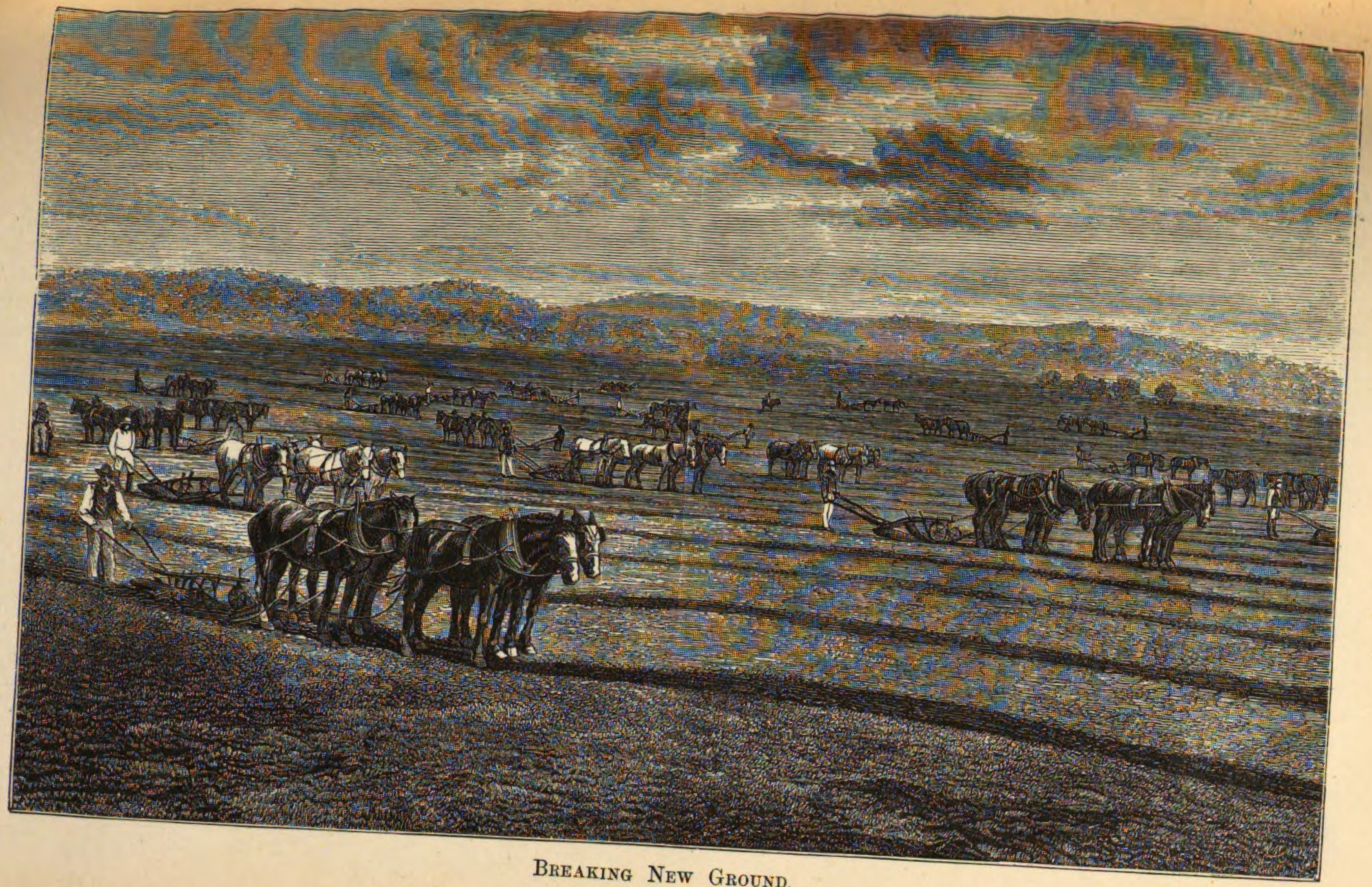
I have said that the present law has worked with singular success. Immense areas of land in the North have been surveyed and offered for sale on credit. Half-a-dozen years ago most of this land was used as sheep runs—supporting a dozen or a score of persons. Now it is covered with smiling homesteads and prosperous farms, on which many hundreds of

families are settled, with every prospect of future success. In the course of a few years, these farms will be the freehold estates of a steady and intelligent class of farmers, farming their own land, who will constitute the pith and strength of the Colony. A few thousands of farmers, each farming his own freehold estate of a square mile, or a thousand acres, would form an independent and prosperous class, of which any country may well feel proud.

The amount of money due to the Government for these lands purchased on credit, which will be due within the next six years, amounts to over £2,225,000. There is reason to believe that most of the purchases will be completed; but if they are not, the land, greatly improved by the erection of buildings and cultivation during the six years, will revert to the Government, and can be sold again.

I had an opportunity of visiting these northern areas just before the last harvest, when they were loaded with magnificent crops of golden grain. I had seen the country three years before, when only a small portion was devoted to agriculture; the rest was still immense sheep runs. I travelled for miles day after day amongst the finest crops of wheat I ever witnessed. In some places the reaping had commenced, and the farmers were cleaning up from 14 to 18 bushels per acre. In other more favoured spots it reached from 25 to 30 bushels. I saw several towns which had sprung up as if by magic, on sites where three years before there was not a soul to be seen, and where my companions and I lighted a fire, boiled our "billy," and made tea for our midday refreshment. A fine port in Spencer's Gulf, for the outlet of the produce of the district, had risen up from what used to be something like a dismal swamp. Wharfs were erected, large stores built, banks and churches founded; and all this was the work of less than three years! And as far as can be seen, we are just tapping that great agricultural district which lies to the north of the Burra and Clare. The squatter has to give place to the agriculturist and move backward. Happily for some of the wealthiest of them, but unfortunately for the country, they have purchased magnificent estates of from 40,000 to 100,000

acres of fine land. Some of these gentlemen have entered into competition with the farmers and have gone largely into wheat-growing. Last year a gentleman, specially representing an influential Melbourne journal—*The Leader*—visited this Colony and published an interesting and well-written report of what he saw. I transcribe to these pages his account of the Hill River Estate, the private property of Mr. C. B. Fisher, as an example of how men of capital and enterprise are now combining the two pursuits of wool-growing and agricultural farming.



BREAKING NEW GROUND.

CHAPTER XIII.

THE HILL RIVER ESTATE.

Combining Agriculture with Stock Breeding—Great Farm—The Mechanical Appliances for Working it—Regulations for Workmen on Estate—Success.

HILL RIVER ESTATE, the property of Mr. C. B. Fisher, is situated in the County of Stanley, two miles eastward of Clare, the furthest agricultural township to the north previous to the opening up of the new areas. The total distance of Hill River from Adelaide is 88 miles, and railway communication is obtained by taking the Burra line at Farrell's Flat, 13 miles to the east. The property is 60,000 acres in extent, lying north and south in a valley between two tiers of hills—the eastern tier being, like the country in that direction—treeless; but the western one, together with some of the undulating land in the valley approaching its base, is lightly timbered with sheaoak and gum. The valley is on an average about seven miles broad, and the estate extends about 25 miles in length; the Hill River, a permanent creek, which takes its rise to the south, running along the centre. The valley is composed of a rich deep chocolate soil washed from the surrounding high land, which is of slaty conglomerate formation set on edge, and running in reefs mixed with quartz north and south, along the crests of the boundary ridges. The property, which is under the superintendence of Mr. E. W. Pitts (formerly of Victoria), who is general manager for the whole of Mr. Fisher's property in South Australia, and of Mr. J. Emery, who is resident manager, is worked as a

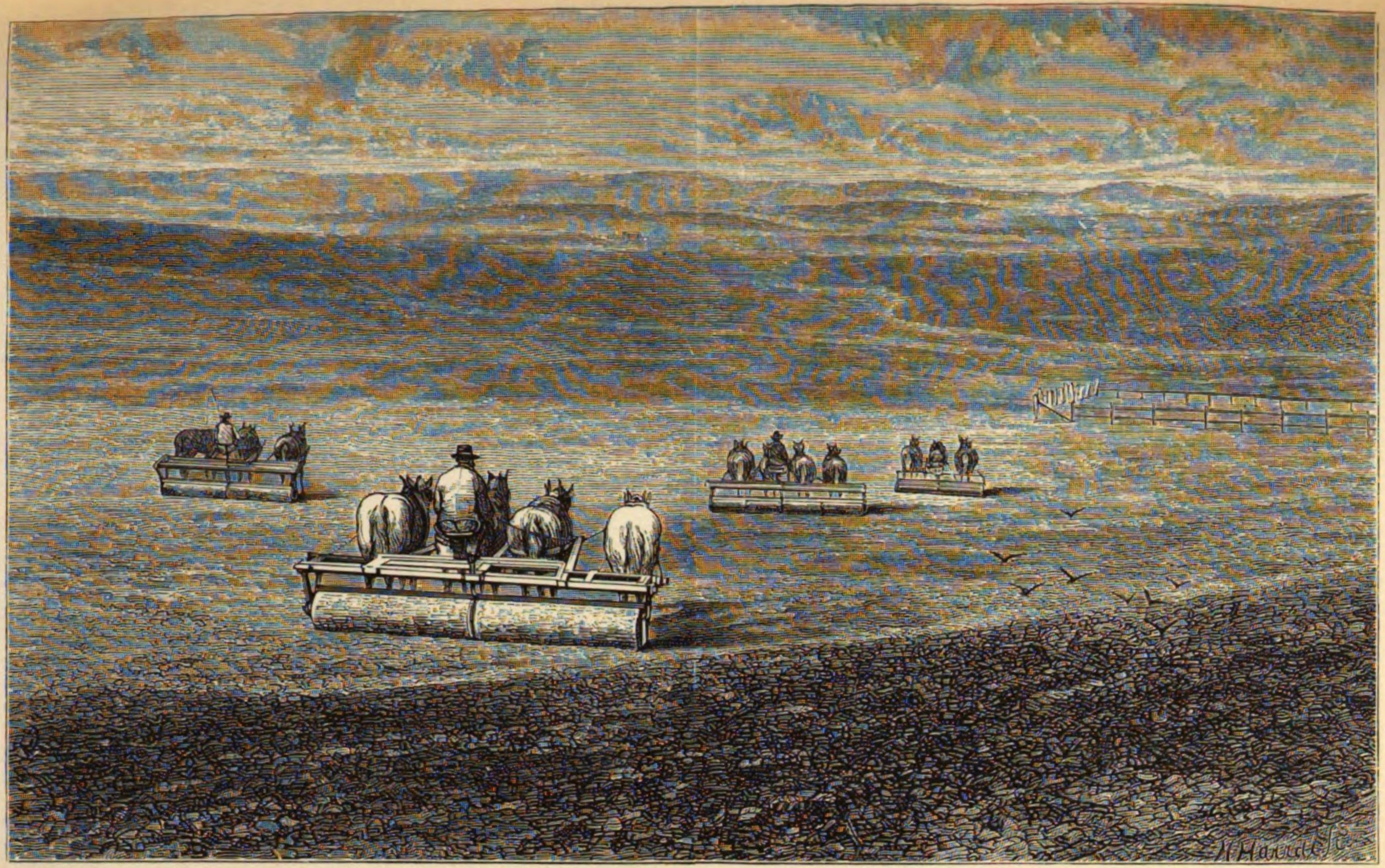
sheep-breeding establishment and wheat-growing farm on a large scale, the latter being carried on with the ultimate end in view of preparing the soil for the sowing down of lucern and prairie grass. The station is divided into four different establishments, viz., the wool-shed and drafting-yards, seven miles down the valley to the north; a new series of farm buildings, two miles to the east, being prepared for harvest; another large farming establishment nearer home; and the homestead, a stone residence and stabling, surrounded by well-kept grounds, orangery, and orchard, comprising in all twelve acres. In the kitchen-garden of four acres every description of vegetable is produced in abundance, and this portion of the establishment is found to be very valuable, where so many hands are employed. The drafting-yards at the wool-shed are of a complete kind for the handy working of the sheep, and are flagged in the race and crush dens with slate obtained on the property. The buildings for the shearers are of stone, divided into dining, sleeping, and cooking departments, the latter fitted with the latest appointments, and a separate stone cottage is provided for the overseer. The number of sheep shorn is 50,000—the shearing floor accommodating 40 shearers. The Hill River wool is of the Merino combing description, and for length and strength of staple combined with weight of fleece has not been exceeded by any other run in the Colony, except Bundaleer, Mr. Fisher's other run further north, where the same breed of sheep are kept. The clip last year was from 9 lbs. in the wether to 3½ lbs. in the lambs in the grease, or an average all through of about 7 lbs., for which an average of 14½*d.* was obtained. Sheep-washing is not usual in South Australia, through the scarcity of water; but the chief drawback on Hill River is its hardness, being brackish and metallic from the mineral nature of the watersheds. Amongst some fleeces selected during the late shearing for the Sydney Exhibition, one two-tooth Merino ram's fleece weighed 17½ and a four-tooth 21 lbs. About 200 cattle, some of which are of superior shorthorn blood, have lately been introduced, and the intention is to obtain a good bull and begin that department of breeding. The new farm



SOWING—HILL RIVER FARM, NEAR ADELAIDE.

buildings are being erected handy to the cultivated land, which is about midway in the valley, the furrows running lengthwise. The buildings comprise a quadrangle of 10 feet high, stone walling 120 feet long each side, roofed with galvanized iron, with a slope inwards, and divided off into 10 by 10 loose-boxes for horses, each box containing close feed-manger for bruised peas, bran, and cut hay, with which all the horses on the place are systematically fed. A well and trough for watering occupy the middle of the square, which will be built upon further, so as to accommodate 200 horses, the total number at present employed on the estate. The other buildings consist of men's stone buildings, with dining, sleeping, and cooking departments separate, overseer's residence, large hay-cutting and corn-bruising house, and barn 106 feet by 34, and 15-foot walls, with a holding capacity of 60,000 bushels of wheat, besides compartments at the rear for two blowers and screens for finishing the wheat off in a uniform sample after it passes through the winnowers in the field. These blowers, which are worked by horse power, and have self-acting elevators for passing the wheat from the fans to the revolving screen, get through at the rate of 700 bushels per day each. The cultivated land is in large fields, one of which is three miles long, and contains this year 4250 acres of wheat, besides 40 acres of peas grown for horse feed and a quantity of barley, and 1800 acres new land turned up for fallow. Next year the land first ploughed will be three years in crop, when it is proposed to yearly lay down that which has yielded three crops in lucern and prairie grass, and shift the wheat ground further on to new land. The ploughing was performed by thirty-four horse teams drawing a double plough each, doing from two or three acres per day, according to the time lost in travelling to and from the work, and five single ploughs striking out. It is estimated that with the teams nearer their work 3½ acres per day will be accomplished. One man is allowed to each plough to manage both driving and guiding. Ploughing is done eight inches deep at first, so that the land can be turned over afterwards in the dry season immediately after the removal of the crop. The seed, which

is of several kinds, to ascertain the best, was sown the first week in June, with six of Adamson's twenty-two-foot broadcast machines, sowing, under the management of one man, forty acres per day each. The pickling used is bluestone, and an ingenious dipping apparatus is used by which a bag at a time can be done with much rapidity. The lands are ploughed one chain wide, and are harrowed by fifteen sets of six-leaved harrows, doing a land in two turns. The first sets are heavy and drawn by six horses, and the second, which are lighter, go across and finish. The harrowing is finished at the rate of 500 acres per day. As harvest approaches two-chain wide strips are cut by the mowing machines at intervals, cutting the wheat into 200-acre blocks, and then strips (upon the removal of the wheat for hay) are ploughed, together with strips right round the crop, for protection against fire. When the wheat is ripe, the strippers are then set to work, emptying on the roads at each end of the 200-acre blocks. Each stripper is drawn by four horses, driving and guiding being managed by one man; and each machine does from seven to eight acres per day, according to the weather. Last year twenty-seven strippers were employed, but this harvest ten additional new ones will be required. About one winnower to three strippers is required on the headlands for cleaning, which is done by piece work, the men obtaining 1*d.* per bushel for putting the wheat through once, and 2*d.* for twice. From the winnowers in the fields it is carted in bags to the blowers and screens, from which it is bagged, sewed, and passed into the barn. The land under wheat last year was 3050 acres, which yielded at the rate of fifteen bushels, thirty-five acres of peas yielding forty bushels per acre, and sixty acres of barley giving thirty bushels. The quantity of wheat cut for hay last year for home consumption was 600 tons, and this year 800 tons will be required. The wheat grown on this farm took the challenge cup, value £50, in Adelaide, for the best 100 bushels in 1873; the prize at the late show for the best bushel with a sample of purple straw weighing sixty-eight pounds; and the present harvest at the time of my visit promised to eclipse any former effort. At the farm steading near the home station, a similar



ROLLING—HILL RIVER FARM, NEAR ADELAIDE.

stabling accommodation to that described exists, and as the supply of Clydesdales increases at another station of Mr. Fisher's devoted to breeding, it is proposed to increase the working capacity of the Hill River farm by two-thirds, or three steadings in all, with 200 horses each. At this steading there is another series of men's buildings, together with chaff house, with chaff-cutter, cutting one ton per hour, implement yard and sheds, containing in addition to the ploughs and strippers, harrows and sowers, already mentioned, fourteen waggons, six scarifiers, four hayrakes, ration carts, waggonettes, and other vehicles and implements; a blacksmith's shop containing two forges, carpenter's shop and saddler's shop for repairing, overseer's residence and a large number of cottages for the married men who permanently stay on the place. Two large dams of water supply the home station and home farmstead with water, and there are six others in various parts of the run. This work, which is constantly being carried on, is done by plough and scoop. Sixteen acres of trees have been planted in two-acre blocks in various parts of the run, the kinds found to do best being the Tasmanian red gum, *Pinus insignis*, and sterculias. A large plantation of about seventy acres for trees is in course of preparation above the house, and olive planting is carried on annually. The large quantity of manure made by such a quantity of stable horses is carefully looked after, and is to be put on the land along with the lucern. Pigs are profitably kept upon the waste wheat; and on a small experimental farm, maize, millet, and sorghum have been tried with success, and various kinds of wheats are planted in drills to try their relative merits. The purple straw so far has been found best. On one portion of the farm also experiments to prove the efficiency of subsoil ploughing and other matters are attended to. Amongst the improvements to be eventually carried out, a public reading room and library are to be added to each homestead, and other measures of an educative and elevating character are to receive attention. The hands employed, apart from shearing and harvest seasons, average about seventy. When these latter operations are on, the number is over 200. Young draught horses are constantly

being brought from the breeding establishment near Adelaide, and broken by means of waggon, plough, scoop, or other of the numerous kinds of work constantly going on.

The following rules of the establishment are posted in the various buildings:—Working hours: All hands to rise at five A.M., when the bell rings; horses to be fed, watered, and cleaned; breakfast at six; all teams to be afield at seven; dinner hour at noon; work to commence again at one P.M., to continue to six in summer and five in winter; supper at seven; horses to be fed and watered at half-past eight, and the dining-room to be cleared and locked up at ten P.M. Wages: First-class men will be paid at the rate of 20*s.* per week; second-class at 18*s.*; third-class at 16*s.* Any one by good and industrious conduct can raise himself to the highest class. Wages paid every fourth week, and at no other time. Any one in charge of horses neglecting to feed and tend them properly, or found abusing them, will be discharged at once, and forfeit all his wages due. Any one wilfully disobeying orders or neglecting his duty will be discharged, and will forfeit two-thirds of the wages due. Any one found in a state of drunkenness will be instantly discharged, and absolutely forfeit all wages due. Any one bringing intoxicating liquors on the premises, as well as those partaking of them, will forfeit all the wages due, and be instantly discharged. Any one found smoking near the stables or stacks will be at once discharged and proceeded against under the Bush Fires Act. Each man at the time of hiring is required to sign the above rules, binding himself to abide by them in all respects.



HARROWING—HILL RIVER FARM, NEAR ADELAIDE.

CHAPTER XIV.

THE REAL PROPERTY ACT.

Sir R. R. Torrens — Early Struggles to establish Act — Opposition of Legal Profession — Principles of Act — Transferring Real Estate by Registration of Title — Indefeasibility of Title — Simplicity and Cheapness — Lands' Titles Commissioners and Solicitors — Assurance Fund — Amendment of Original Act — Great Success of the Law — Value of Property brought under the Act — Taken up in Neighbouring Colonies.

A GREAT measure of legal reform, on which the people of South Australia justly pride themselves, is the Real Property Act, devised by Mr. (now Sir R. R.) Torrens, a gentleman then holding a public position in the Colony. Mr. Torrens had seen and felt, as many more have done, the scandalous delay and expense of transferring real property under the old law of England. This system of transferring real estate by deed we of course brought with us to this new Colony, where it was soon found to be productive of many of the evils which attended it in the old country. In every fresh transaction in real property a new deed was necessary, which recapitulated all the deeds that had gone before, and which was both cumbrous and costly. It was thought that it might be possible to invent a simpler, cheaper, and safer system; and the merit of thinking out and formulating this system belongs to Sir R. R. (then Mr.) Torrens. He had formerly been Collector of Customs at Port Adelaide, and his official employment made him familiar with the laws relating to shipping, having, as he states in a pamphlet published by him, "just such an acquaintance with the English Constitution and laws as ordinarily entered into the education of an English gentleman."

His starting-point was to apply to the transfer of land the principles which regulated the transfer of shipping property, by means of registration. The idea was a correct one, but between its conception and its formulation into a code of law there was a long and painful interval. He consulted the then Chief Justice, Sir Charles Cooper, and other legal gentlemen, and they gave him but little encouragement. He was not a lawyer. Many technical difficulties would arise which would need a lawyer's trained skill to surmount, and they warned him that he might expect no help or support from the profession. Mr. Torrens, however, was one of the few men who are not to be discouraged by want of sympathy, or beaten by opposition. The subject was near his heart, and he pondered over it night and day, until it assumed shape and form in his mind. He then drafted a Bill, submitted it to some of his friends, listened to their suggestions, and adopted them where he thought it wise to do so, and then brought it before Parliament. The Bill was laughed to scorn by the profession, but it was eagerly and enthusiastically welcomed by the public. Most of the lawyers stood aloof. For a layman to attempt to alter the whole system of transferring real estate by deed which had the prestige of immemorial usage in its favour, and to deal with real estate as if it were a mere chattel, was as absurd as if a tailor were to invent a new method of cutting for fistula, or an illiterate ploughman a new method of calculating an eclipse! Mr. Torrens, however, made light of both opposition and ridicule. There was a crying evil to be remedied; he had undertaken to remedy the evil, and, in spite of all opposition, he would do it.

Mr. Torrens was returned to Parliament as one of the members for the city for the express purpose of carrying the Bill through the Assembly. The legal members opposed him tooth and nail, but he had a large majority of willing supporters at his back, and the Bill was literally forced through the House by "the brute force of a tyrannical majority." There was greater opposition in the Legislative Council, which has always been found more conservative of old institutions. But public opinion and the sense of the community were too strong to be



IMPERIAL BUILDINGS.

resisted, and the Bill passed the Council, was assented to by the Governor on January 27, 1858, and became law.

When the measure became law, at the request of his friends, Mr. Torrens resigned his seat in Parliament, and became the official head of the department. He suggested or superintended all the machinery required for practically working the new system. He laboured at it unceasingly, and when the Act came into operation on July 2, 1858, all the office machinery was ready to work it.

The first great principle of the Act is the transferring of real property by registration of title instead of by deeds; the second is absolute indefeasibility of title. The system is very simple and very inexpensive. The certificate of title is registered in the official registry at the Lands' Titles Office, the owner obtaining a duplicate certificate. All transactions under the land appear on the face of the certificate, so that at a glance it may be seen whether the property is encumbered, or any charges are made upon it. If an owner wishes to mortgage his land, he takes his certificate to the office, and has the transaction marked upon it. If he wants to sell, he passes over the certificate to the purchaser, and the transaction is registered. Any man of ordinary intelligence can do all that is necessary for himself when once his property is brought under the Act. The only difficulty is in getting the title registered at first. After that it is all plain sailing. When a man holding property under deed wishes to have it placed under the Act, he takes his deeds, which are his title to the property, to the office. The deeds are carefully examined by the solicitors to the Lands' Titles Commissioners; and if there is no difficulty, and after all due publicity is given and precautions taken to prevent fraud or mistake, a certificate is issued, and the old deeds are cancelled. From the moment the land is brought under the Act and a certificate granted, the title of the person holding the certificate becames indefeasible, unless it has been fraudulently obtained; and he can hold the property against the world.

Provision is made for errors that may possibly occur, by which persons may be damnified or deprived of their property.

Even though a wrong may have been done, yet an innocent holder of a certificate cannot be dispossessed of his property. But to compensate persons who may through error or fraud have been deprived of their property, an assurance fund has been created by a percentage of one halfpenny in the pound being levied on all property brought under the Act. This fund now amounts to between £30,000 and £40,000, and all the claims that have been made upon it during the seventeen years the Act has been in operation do not amount to £300, which is a sufficient proof of the carefulness exercised in the examination of old titles before the certificate was issued in the first instance.

Since this Act came into operation, all land grants issued from the Crown have been registered under it, and a large amount of property formerly held under deed is now registered. Confidence in the Act has gradually gone up. The lawyers very soon withdrew active opposition, and the simplicity of the scheme commended it even to the legal mind. Up to the close of 1874 the value of the property brought under the operation of the Act, including land grants, was £9,260,186. The benefit to the community of having a cheap, simple, and expeditious method of dealing with land is incalculable. Mr. Dudley Field, the well-known American jurist, who was recently on a visit to his daughter, the wife of our Governor, expressed his great admiration at the simplicity of our Real Property Act, which was much in advance of any system of dealing with real estate with which he was acquainted. The Act has been amended more than once, to render it more workable, but its essential principles have been jealously guarded.

Soon after it was set into healthy operation, Mr. Torrens obtained leave from the Government to visit the neighbouring Colonies at their request to explain and help to initiate this Act there, and now all the Colonies have adopted the Torrens Act of registration of title. The principle of the Act has also been accepted by the first jurists at home, and several attempts have been made to get it into legal operation. Lord Westbury's Act was a step towards it, but it had some serious defects

which have prevented its being a success. There is no doubt that it is much easier to introduce the system into new Colonies, where titles are easily traced, than into old countries, where, during the lapse of generations, they have become complicated.

As the Act has been administered, certain grave defects in some of its provisions have been discovered and pointed out by the Judges. It was subjected to a thorough revision in 1862 by a Commission, presided over by the present Chief Justice, who was then Attorney-General, and as the result of that Commission an amended Act was passed. Other defects have been discovered, and a very complete amending and consolidating Bill, prepared by Mr. H. Gawler, one of the solicitors to the Lands' Titles Commissioners, has twice passed through the House of Assembly, but has failed to pass through the Legislative Council. This Bill has received the support of two Ministries, and as it is urgently required, it, or something like it, must become law.

CHAPTER XV.

RAILWAYS.

Difficulties of Carriage in a New Country — Macadamized Roads, Extent and Cost — First Railway to Port Adelaide — Extravagant Cost — Other Lines — Present Extent of Railways — New Lines in Process of Construction — New Lines proposed to be carried out — Proposal to borrow £3,000,000.

ONE of the most serious difficulties a new country has to contend against is that of obtaining feasible means of communication between the interior and the seaboard. This has been much felt in South Australia, where, with one exception, we are entirely without water communication. Our only river is the Murray, and that is available for only one part of the Colony. Pastoral settlement lies principally in another direction, and agricultural settlement entirely so. At first we were satisfied with macadamized roads, which have been constructed to a large extent, and at a great cost to the community. The extent of main roads, excluding all those under the charge of District Councils, is 2707 miles, of which 884 miles have been thoroughly made with metal. The cost of our main roads during the last twenty-two years has been about £1,800,000. It is now proposed to extend the road system where railways cannot be made, for which a considerable sum of money is proposed to be borrowed.

There is, however, a growing opinion, as I have mentioned before, in favour of substituting railways for metalled roads in all practicable cases. The first locomotive railway line was one of eight and a half miles, between Adelaide and the Port, which was constructed at a frightful and wasteful cost. In



ENTRANCE TO RAILWAY STATION.

the making of that line the colonists paid heavily for their experience in railway construction. A line running north as far as Gawler was next undertaken, and, after a few years, it was continued to Kapunda, a distance of about fifty miles. Subsequently it was extended to the Burra, a distance of 100 miles. These lines have been well built, and are now in very successful working order. In addition to these the Government have three tramways, worked by horse power. The oldest of these is a line between Goolwa and Port Victor. It was built in Sir Henry Young's time as far as Port Elliot, when it was expected that this port would be the grand outlet for the Murray trade. Port Elliot was superseded by Port Victor, and the line was extended to that harbour. This short line has done good service to the Colony in past times. The next tramway was a very expensive one, from Strathalbyn to Middleton, a station on the Goolwa line. The engineering difficulties on this line made it a very costly one, and it has never yet paid the expenses of working, leaving out of account altogether the interest on its original cost. This line is one of our "magnificent failures," the construction of which is now greatly deplored.

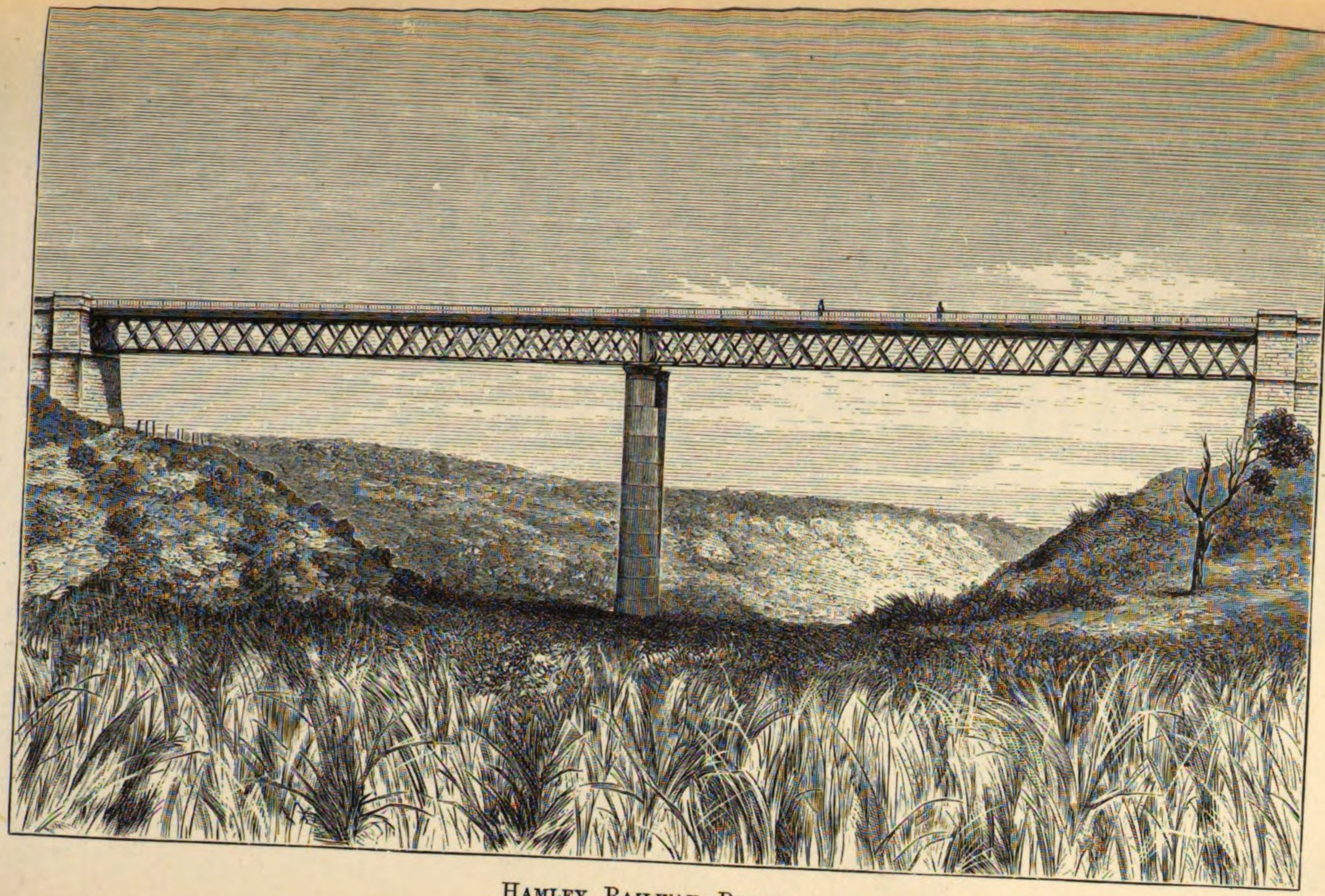
Of a very different character is a tramway between Port Wakefield and Hoyleton, which has subsequently been extended, and is now thirty miles long: a further extension of the line is now in progress. This is one of those lines of railway which are of the greatest service to the country. It connnects a rich and an extensive agricultural district with a port of shipment; and the traffic which passes over it annually, both passenger and produce, is very large.

Three additional lines of railway are now in progress; the most important of which is one between Port Pirie, in Spencer's Gulf, and Gladstone, a new township in the northern areas. It is hoped that a portion of this line, as far as Crystal Brook, will be opened in the course of a few months. It is intended, ultimately, to carry it as far as James Town, the centre of the immense agricultural area in the North. It is impossible to over-estimate the value of a line of this kind, which will tap one of the most productive

districts in the Colony. Another short line of fourteen miles is in course of construction from Port Broughton, also in Spencer's Gulf, to a block of agricultural land which forms one of the earliest agricultural areas proclaimed by the Government. The third line is from Port Wakefield to Kadina, about the necessity for which there is some grave doubt. The Government lines which have been finished—leaving out of account those now in progress—have cost £1,093,497, in addition to £198,793 for rolling-stock. I have omitted to mention amongst the lines now in course of construction an important one from Kingston to Naracoorte, in the South-Eastern District, which is fast approaching completion; it is nearly fifty miles long.

Our railways have been constructed on different gauges—the 5-foot 3-inch, however, predominating. The shorter lines are on the 3-foot 6-inch gauge. The "Battle of the Gauges" has been fought here, as it was in England, and it is not yet ended. The idea we seem to be slowly reaching is, that for all trunk lines capable of extension the broad gauge is preferable; while for shorter independent lines the narrow one is sufficient. The cost of the lines has, of course, varied to a large extent. The Port Railway, constructed in 1856, cost the enormous sum of £17,500 per mile; but a short extension, connecting it with the northern lines, carried out in 1867, was made at under £5000 per mile. Our latest railways have cost from £4000 to £6000 per mile.

Besides the Government railways there are two private lines, constructed by private companies—one in the mining district on Yorke's Peninsula, connecting Kadina with Wallaroo and Moonta; this is about eighteen miles long, and is worked by horse power. It has been wonderfully profitable, owing to a favourable contract which the Company made with the proprietors of the mines for the conveyance of their ores. The fortunate shareholders in this railway have from the very first enjoyed very large dividends, besides spending a considerable proportion of the profits in improving and extending their works. The second private line is one between Adelaide and Glenelg, six and a half miles long, and which is almost



HAMLEY RAILWAY BRIDGE.

exclusively confined to passenger traffic. This line, worked by locomotive power, has been working for about two years, and has returned handsome dividends to the shareholders. It is worked on the cheap principle—there being neither stations nor platforms. The passengers enter from the street, as they would get into an omnibus; and the working expenses have been reduced to a minimum. It is, however, amply sufficient for the traffic, and is creditably conducted. A scheme is just now starting by a private company for a street tramway from the centre of the city to the eastern suburbs, about three miles in length. The capital has been raised, and the work is to be set in hand at once.

Some years ago an ambitious project was started to carry an overland line of railway right across the continent from south to north—from Adelaide to Port Darwin. It was proposed by English capitalists, on obtaining blocks of land on each side of the line, amounting to 200 millions of acres in all, to construct a line of railway 2000 miles long to cross the continent. The terms, however, were considered too high by the colonists, and there was a strong objection to alienating such a large amount of territory; so the matter fell through. There are sanguine and enterprising men amongst us, however, who still anticipate the construction of such a work before many years have elapsed.

The present Government have initiated a grand policy of railway extension, which has already been brought before Parliament. It is to borrow £3,000,000 for the construction of railways and other public works. By pushing out the settlement of the country we have reached this position, that we must greatly extend our main road system, or construct railways on a large scale. The settlers in the interior must have means of communication with the seaboard, and so with a profitable market. The great advantage of railways over roads is that when they are made in suitable localities they are self-supporting, while roads involve a continual annual expense to keep them in repair. Apart then from the greater facility for conveyance afforded by railways, on economical grounds they are preferable to metalled roads.

Amongst the lines recommended by the Government is one 200 miles north of Port Augusta, to connect the rich copper mines of the North with the sea. It is believed that some of these mines are more valuable than any that have yet been discovered in the Colony. But no copper mine in the world, unless under very exceptional circumstances, will afford a cost of £10 per ton for carriage to the seaboard. While copper was higher in value than it is now, some of these northern mines were carried on even with this ruinous charge for carriage. The importance of a line, such as it is proposed to construct, has been admitted for years, but difficulties stood in the way which prevented its being carried out. I have no hesitation in saying that the necessary work will be carried out; and that in the course of two or three years we shall have connected the rich mineral district of the North with Port Augusta, at the head of Spencer's Gulf. In addition to the facilities it will give for the conveyance of copper and copper ore, it will be of great use to the sheep farmers in the North, who will be able to send down their wool and to get up their supplies at a reasonable cost.

Another line which the Government propose to carry out is one to bring the Murray trade direct to Port Adelaide. I shall refer more particularly to this in a subsequent chapter on the Murray and its trade. It is sufficient to say here that the Government propose constructing a line of railway from Kapunda, already reached by our northern railway, to the North-West Bend in the river. The distance will be about fifty miles, and the advantages of such a line are pretty generally admitted. Other lines of no small importance are also embraced in the Government scheme. This bold policy has been fully appreciated by the colonists generally, and I have no doubt the main features of the scheme will be carried out.

A question has been raised as to whether the Colony is justified in adding three millions to the national debt. About this, however, the most thoughtful minds amongst us see no difficulty. We have the smallest debt per head of the population of any of the Colonies; our taxation is lighter than in any

of the Colonies; and we can easily bear more; the value of our exports and imports is increasing every year; the country has almost illimitable resources only waiting to be developed; and in addition to all this, there is due to the Government at the present time for land taken up on credit, and payable within the next six years, no less a sum than £2,225,000. This amount will increase every year, as new lands are surveyed and purchased by the agriculturists. Our credit stands deservedly high in the English money market, and our bonds touch the top figure amongst those of the Colonies.

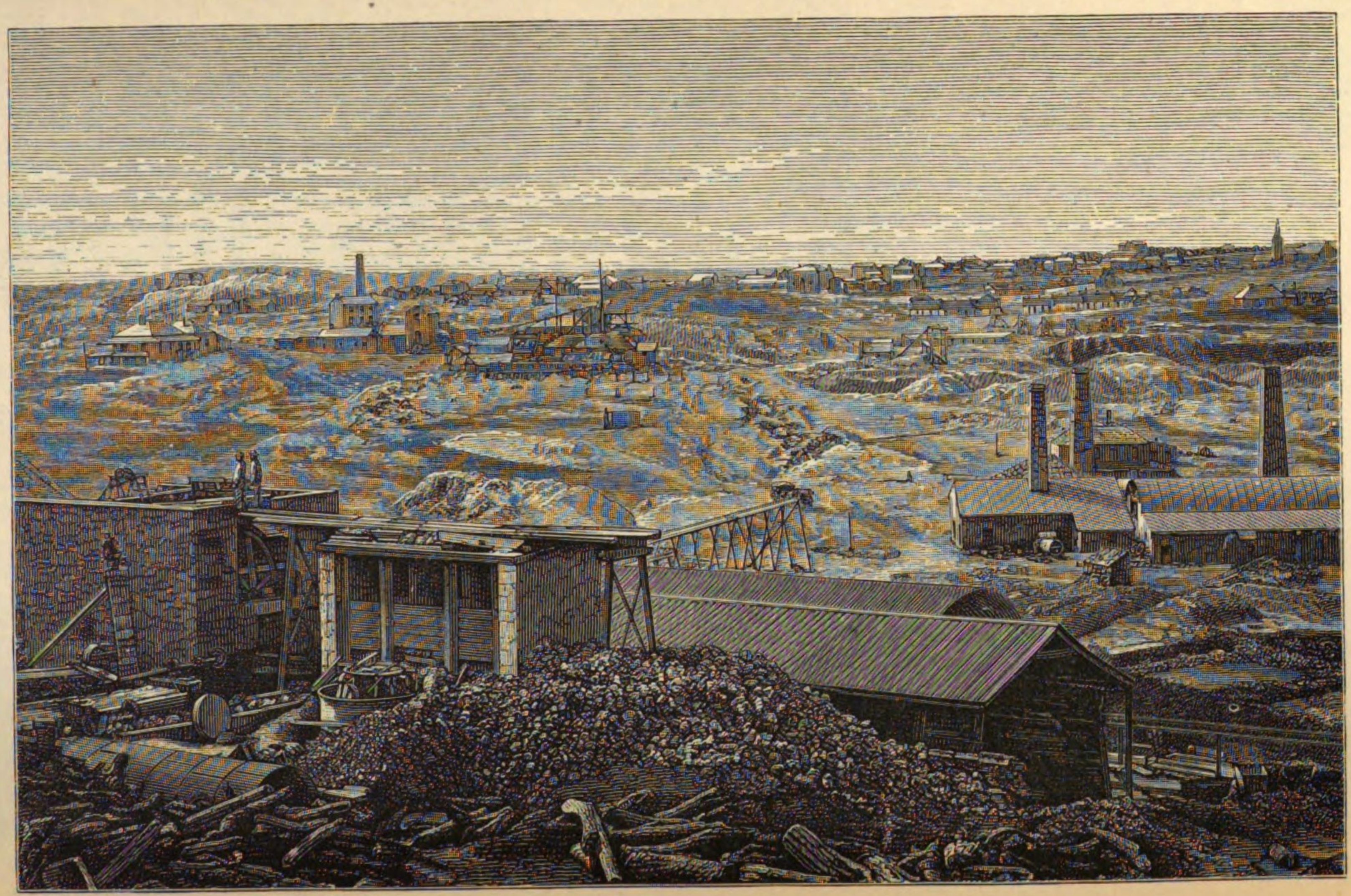
In connexion with this large proposed expenditure on railways, the Government propose spending a considerable sum—£100,000 at least—on immigration. They have wisely reached the conclusion that the introduction of labour must keep pace with the construction of great public works. It would not be well for the Colony to withdraw labour from private employers, and it is perfectly legitimate, when public works on a large scale are to be undertaken, to introduce labour at the public cost to carry them out. All the reasons which justify the further development of the great resources of the Colony justify the introduction of more man-power at the public expense.

CHAPTER XVI.

MINES AND MINING.

South Australia rich in Minerals — First Discoveries — The Kapunda Copper Mine — The Burra Burra — South Australian Mining Association — Yorke's Peninsula Mines — Wallaroo, Moonta, Doora — Immense Value of Copper raised — Smelting Works — Mineral Laws and Leases — Getting up Companies on 'Change — Mining a great Benefit to Colony.

THAT the province of South Australia was rich in mineral deposits was believed very early in its history. Soon after the City of Adelaide was laid out, a rich vein of silver-lead ore was discovered a few miles distant, which, however, in its subsequent working, has signally disappointed the expectations which were formed of it. Other mines of a similar character were discovered in the southern district, on which large sums of money were expended, but they have not been worked with success. Gold has also been discovered in several parts of the Colony, which have attracted a large number of diggers, and where considerable quantities of the precious metal have been obtained. So far, however, gold digging has not taken its place as one of our great staple industries. Hundreds of diggers have made good wages in several proclaimed districts, and some very handsome specimens have been obtained. It is generally believed that gold will be found in larger quantities than have yet been obtained, and that by the expenditure of adequate capital the auriferous treasures which are believed to exist will be brought to light. Some half-dozen very likely districts have been tried, and in every instance with encouraging results. Bismuth has also been found at Balhannah, a place about twenty miles from



Kapunda Mine, near Adelaide.

Adelaide, and the property promises to become a very valuable one.

But copper has been our great mineral product, and some of the richest mines now worked appear to be almost inexhaustible. The first copper mine in the Colony was discovered on a sheep run at Kapunda, and has been worked since its discovery with a fair amount of success. It was thrown into the shade, however, by the discovery of the famous Burra Burra Mine, which, for its richness, has obtained a world-wide celebrity. Copper was discovered there in 1845, and a company, called the South Australian Mining Association, was formed to work it. The capital of the Association was raised by the issue of 12,320 shares of £5 each, and the total dividends paid have amounted to £782,320. For several years past but little has been done at this once famous mine, but under new management, and by improved means of working, it is more improved.

This mine, however, great as it was, was eclipsed by the marvellous discoveries made on Yorke's Peninsula in 1860. A shepherd employed on the run of Mr. W. W. Hughes, on the Peninsula—an enthusiastic searcher after copper—found a specimen in the beginning of that year. Claims were immediately taken out, and the Wallaroo Mines were commenced. The Wallaroo has been a private company from the beginning, and no report of its actual earnings has been made public. It is well known, however, to have greatly enriched its fortunate proprietors, and it is now a property of immense value. Only three years ago the proprietors agreed to pay a fine of £18,000 to the Government for the renewal of two of their leases, and it is said that the profits of one year more than covered the amount of the fine.

This discovery was followed up by one of even greater value, about ten miles south of the Wallaroo Mines, and now known as the Moonta Mines. From the time that ore was first found, the mine was sufficiently remunerative to pay all expenses of working. Not a penny of capital was ever subscribed; and within two years a dividend was paid. The company is a public one, and the property is divided into

32,000 shares. Their price is now quoted at £19 per share. Thus a property which cost the shareholders nothing is now valued at over £500,000. On these mines dividends have been paid, amounting to £728,000; and last year, six dividends were paid—two of 20*s.*, one of 15*s.*, and three of 10*s.*, amounting for the year to £136,000. In addition to this, very expensive buildings and machinery have been constructed out of the profits, and at the present time a very large population is employed on the mines. The proprietors have just paid a fine of £10,000 to the Government for a renewal of their leases. The most successful of the other mines on the Peninsula are the Paramatta, with 5000 shares —2600 with 5*s.* and 2400 with £1 paid up; and the Yelta, with 3920 shares, on which £7 has been paid up. The Doora is the private property of Mr. W. W. Hughes, and gives the promise of equalling some of the Peninsula mines in value. It has only been worked, however, a year or two.

On other parts of the Peninsula a large amount of money has been expended in legitimate and illegitimate mining. At the present time some of the more recent ventures give the promise of remunerative results. Fifteen years ago Wallaroo was an almost uninhabitable sheep run, on which there were only a few shepherds' huts; now it has large smelting works, railways, jetties, three large and increasing townships, a whole fleet of colliers, carrying coals from Newcastle, New South Wales, for the smelting works, churches, schools, reading-rooms and libraries, two newspapers, and a population of about 20,000 souls.

There can be no doubt that the Colony is only on the threshold of its mineral discoveries. It is believed that copper is freely scattered over a large portion of this immense territory. In the North mines of great wealth have been discovered, and some of them worked at a profit, although the cost of carriage to the seaboard is very great. The mines in the neighbourhood of the Blinman have been worked even when the price of copper was unusually low. Two hundred or more miles north of Port Augusta the country is full of copper; and if some cheap means could be dis-

covered for getting it to a port, a large population would settle there. Attempts are being made to construct a light railway 200 miles northward, and there is reason to believe that this work will very shortly be commenced, as I have shown above.

Iron ores of a rich percentage of the best iron exist in great abundance within an easy distance of the seaboard. Recent attempts have been made to smelt and work the iron, and on a small scale they have been very successful. Pig iron, of a quality said by judges to be equal to the best Swedish, has been exhibited in Adelaide, and was very highly spoken of. In many places the ironstone is found in the midst of large timber, from which charcoal for smelting purposes could be obtained without stint. Now, when the price of iron has risen so high in Europe, the question of investing capital in iron ore smelting in South Australia is worth consideration. The supply both of the ore and of timber for reducing it is practically unlimited for years to come. This is an industry which ought to be turned to profitable account. It would add to the wealth of the Colony, while it would assist in meeting the growing demand in Europe.

The terms on which leases of waste lands may be obtained for mineral purposes are very liberal. The payment of a small annual fee gives a right of search; and leases of lands to be worked by *bonâ fide* miners are obtained for ten shillings an acre. Indeed every facility is given for developing the mineral resources of the Colony, both in copper and gold. What has already been accomplished in this respect shows how easy it is for enterprising men to take up and work mineral sections. Very large fortunes have been made, and the resources of the Colony in this respect seem almost illimitable. A great drawback at present is the scarcity of labour. If the price of copper keeps up to its present quotation, thousands of miners might be profitably employed in this important enterprise. Hundreds of families are now living in the mining townships on Yorke's Peninsula in respectability and comfort which could hardly be dreamt of in the old country. There is

every reason to believe that copper mining will be one of the most permanent and productive of our industries.

It is difficult to form any trustworthy estimate of the amount of capital which has been invested in mining. It has, however, amounted to many hundreds of thousands of pounds, a great portion of which has been hopelessly lost. The colonists are subject to periodical fits of mining mania which runs like wildfire through the community, infecting all classes. It is difficult to know how these fits originate. Something promising is discovered in some likely locality. Mysterious hints are whispered about on 'Change about a "big thing" being discovered. Curiosity is excited, and mining brokers are on the *qui vive*. They who are in the secret wear an air of mysterious importance. Knots of knowing hands gather on the "flags." There are secret conferences, rushing of brokers to and fro; hansom cabs are summoned, and one or two of the smartest of the brokers drive off in haste. All this indicates that something is up. Keen mining men, undeterred by past experience, are drawn into the excitement. A prospectus (more or less truthful) is drawn up, shares are offered and taken up. After a while the shares are "bulled" or "bear'd" as occasion may arise. Often the discovery is a genuine one, and samples are shown to prove its value. Then the country in the neighbourhood of the discovery is examined and becomes immediately valuable. Where the lode is rich in a given locality, it must be rich all around it. If the original discovery, of which the value has been proved, is called, say, the "Nil Desperandum," there is soon started the "North Nil Desperandum," the "West Nil Desperandum," the "Great Extended Nil Desperandum," and such like. There is then a rush for shares, the brokers put money into their purses, and in a few days the excitement is at fever heat. Most of the contiguous claims prove "duffers," or "shicers;" and the unfortunate shareholders, having rushed into the speculation in haste, have opportunity to repent at leisure.

Though a great deal of mischief has been wrought by these headlong panics, it must not be forgotten that mining enterprise has often been pushed forward by such means. Some

have suffered, but others by risking their property have helped to open out useful mines. The prizes, however, in this mining lottery are much fewer than the blanks; and while a few have grown rich by mining, the many have been cleared out of their hard earnings by thoughtlessly yielding to the excitement and being carried away in the rush. Mining at best is but a risky kind of business; and yet legitimate mining has done much to make the Colony as prosperous as it now is. More detailed information on the mines and mining in South Australia will be found in a subsequent division of this work, by Mr. F. G. Waterhouse.

CHAPTER XVII.

THE RIVER MURRAY AND ITS TRADE.

Discovery of the Murray by Captain Sturt — Opening of River for Traffic — Sir Henry Young's interest in the River — Goolwa, Port Elliot, and Victor Harbour — Neglect of Trade — Efforts of Victorians to secure it — Railway to the Murray from Port Adelaide — The Murray Mouth — A proposed Canal to Goolwa — Value of River to the Colony.

THE only river in South Australia deserving of the name is the Murray. We owe its discovery to Captain Sturt, one of the bravest and most successful of Australian explorers. In 1828 this intrepid gentleman was appointed by the Sydney Government to trace the River Macquarie to its source. He ran it into another river, which was named the Darling, after the Governor of New South Wales. The following year Captain Sturt was dispatched to follow up the discovery he had made the year before, and fortunately for him and for Australia he diverged from his former route, and instead of following the Macquarie and the Darling, he explored the Murrumbidgee. Mr. Anthony Foster, in his interesting and useful work on South Australia, thus describes Captain Sturt's discovery of the Murray:—"This river (the Murrumbidgee) Captain Sturt and his companions followed down for nearly four hundred miles, where, from its increasing narrowness, they were afraid they were about to lose it, and with it anticipated the loss of all their toil. But just as their hopes had been depressed to the lowest point, and they were about to give way to despair, they found themselves suddenly projected by the contracting current into a magnificent stream, 350 feet wide, and from 15 to 20 feet deep. And this proved to be the



Boat on River Murray.

Murray, the Antipodean Nile, the prince of Australian rivers, which has since been found to have a navigable course of nearly 2000 miles. Such a discovery was sufficient to have immortalized the name of any single explorer, but it was only the prelude to one of much greater importance—the discovery of the Adelaide Plains, and the extensive tracts of agricultural land which have since constituted South Australia the granary of the Southern Hemisphere."

It was not until during the administration of Sir Henry Young that a vigorous attempt was made to navigate the great river. The Government offered a bonus of £4000 for the first two iron steamers, of not less than 40-horse power, and not more than two feet draught of water when loaded, that should successfully navigate the Murray from the Goolwa to the junction of the Darling. The Murray Steam Navigation Company was originated by Captain Cadell, a man of considerable energy and enterprise, and the late Mr. Younghusband, a wealthy merchant, who was subsequently Chief Secretary of the Colony. This Company soon placed a steamer, the *Lady Augusta*, called after the wife of the Governor, on the waters, and she commenced her trial trip amidst great *éclat*. In 1853 she started, under the command of Captain Cadell, with a party of ladies and gentlemen on board, including Sir Henry and Lady Young, to put to the test the practicability of navigating the Murray. The little steamer safely pursued her course to Swan Hill, distant 1300 miles from Adelaide, from which His Excellency wrote a despatch to the Secretary of State for the Colonies, announcing the triumph he had achieved, and informing him that the steamer carried back to Adelaide a cargo of wool grown in the district, which was the opening of a great trade that would be for the benefit of the whole of Australia through all future time.

This successful beginning was as successfully followed up for a time by other steamers being placed on the river, and a very considerable trade was begun. Ultimately, however, there was a collapse; money was lost in the trade—some who took part in it having been almost ruined, amongst whom was the enthusiastic Captain Cadell; the Company dissolved; and

all the bright visions of the Murray being the Mississippi and Port Elliot the New Orleans of Australia vanished as the morning mists vanish before the rising sun.

The Murray trade then got into other hands, and it has been carried on with more or less success until the present time. There are now several steamers on the river, and they are on the whole well supported. They not only navigate the Murray, but when the seasons allow, which is far more frequent now than when the trade at first began, they steam up the Darling as far as Fort Bourke, a distance of 800 miles from Wentworth, the junction of the two rivers.

The one drawback to this noble stream is the difficulty and danger of exit and entrance through its mouth. The Murray mouth has been a standing difficulty and disappointment to the Colony. It is continually shifting, silting up in one channel and opening out another. It is exposed to the full sweep of the gigantic waves of the Southern Ocean. Though river steamers have been navigated in and out hundreds of times, there is always some measure of risk about it.

What is wanted is a safe and commodious harbour for large vessels, where they can lie in security and be loaded with the upper river produce brought down by the shallow-bottomed steamers. To a certain extent, Victor Harbour has answered this purpose; one or two good vessels do indeed load wool there during the season for the London market, and the Melbourne steamers call every voyage. But, however good the harbour itself may be, it has this serious defect—that river-borne wool has to be landed from the steamers at Goolwa, then conveyed about twelve miles by rail to Port Victor, put on board lighters, and then transhipped from the lighters to the ocean-going vessels. All this causes serious expense, and up to the present time has hampered and hindered the trade. Shippers are not willing to send first-class vessels to Victor Harbour, where they have sometimes to lie for months before they fill up. Wool-growers up the river refuse to send their produce down while uncertainty exists as to finding vessels to take it off. The practical result has been that the produce of the river, which ought to have come to our seaboard, has been



HEREFORDSHIRE CATTLE, ANGASTON.

gradually drifting away to Melbourne. The large and singularly productive tract of country lying between the Upper Murray and the Murrumbidgee, called Riverina, ought to send its produce by water carriage to the mouth of the Murray; our Victorian neighbours, however, have determined—apparently, at any cost—to secure this trade for Hobson's Bay. A railway has been carried from Melbourne to Echuca, a point on the Upper Murray; and the Victorian Government are actually conveying the wool at a loss to the revenue. Much of the trade, it is feared, is hopelessly lost to this Colony; and our object now is to retain that which still remains in our hands.

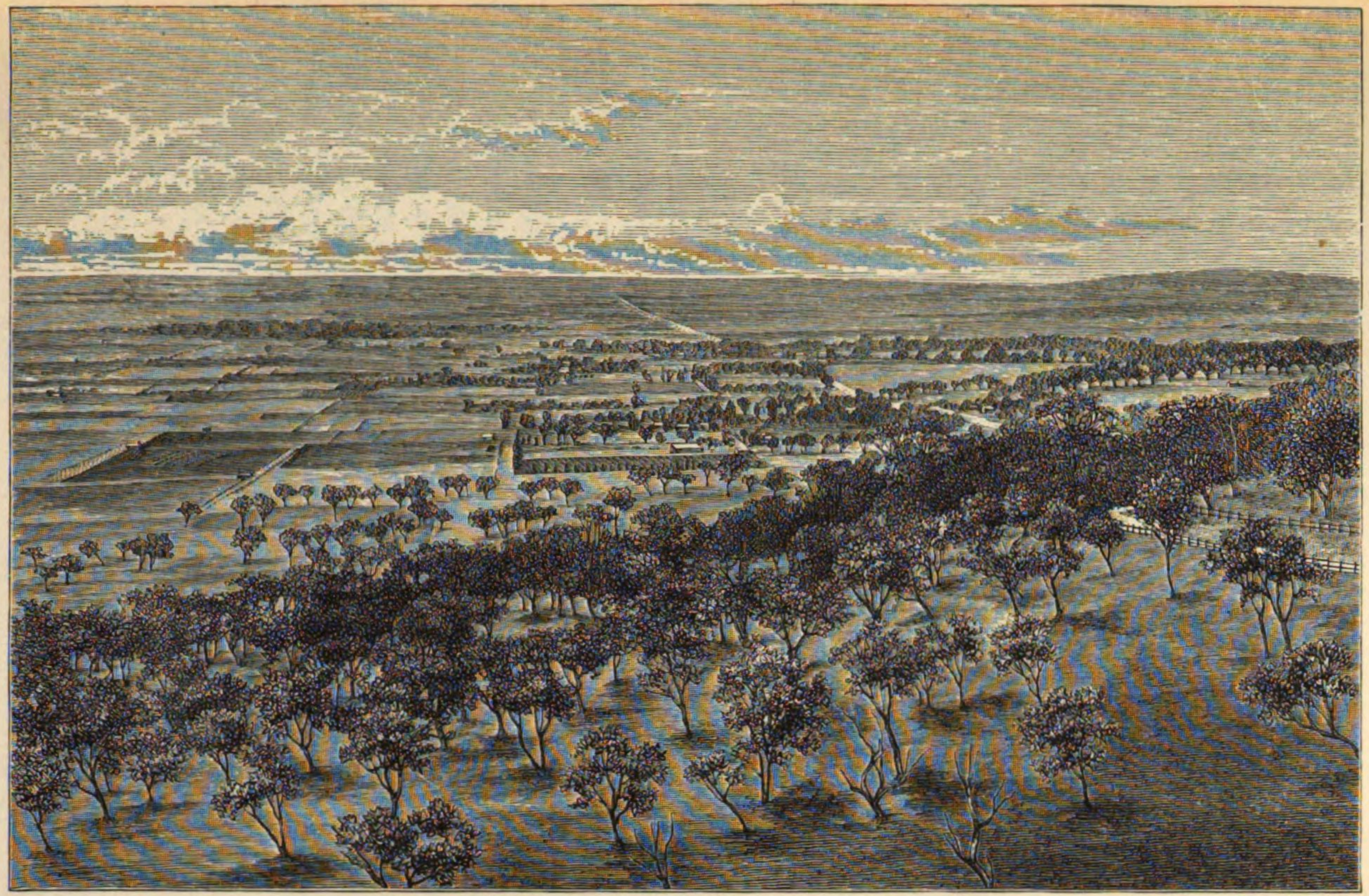
There are two methods by which this is sought to be effected. The first, and most popular, is to connect the river direct with Port Adelaide by means of a railway. All the year round there are magnificent vessels at the Port waiting for freight; and when the produce is once brought to Port Adelaide, it can be immediately dispatched for the home market. This cannot be done if it is sent down to Port Victor, where it may lie for weeks or months, before it can be shipped. To the sheepfarmer much depends on getting the produce early to market; and wool will not be sent to any port where it cannot get quick dispatch.

A railway to connect the Murray with the Port has been talked about for many years; but there is now a probability of its becoming an accomplished fact. One great difficulty has been to fix upon a route for the line. Local jealousies have prevented unanimity. The present Government have fixed the route, as I have mentioned already, between Kapunda and the North-West Bend, and it is probable that this route will be adopted by the Parliament. There is a strong and influential party, however, in favour of a line over the Mount Lofty range of hills, which would pass through a fruitful and settled district. The two great arguments in favour of this line are—first, that it would secure a good trade from the very beginning; and, secondly, that it would be the commencement of a great overland line of railway connecting Adelaide with Melbourne and Sydney. These two arguments have great force. The time is

not far distant when we shall have the three Colonies joined by railway communication; and if we must tap the Murray, something valuable would be gained by tapping it in such a direction, and the line constructed would be the beginning of an overland route.

But the strongest, if not the only, argument against a line over the hills is its enormous cost. The lowest computation makes it about £1,200,000 for the seventy-five miles, which is more than the Colony can afford in its present circumstances. We want lines of railway in other parts of the Colony where there is less accommodation for the conveyance of produce to the seaboard. At £4000 per mile we could make 300 miles for the cost of the seventy-five miles over the range; or at £5000 per mile, 240 miles. And it is considered much wiser at the present time to open out new country with 300 or 240 miles of railway than to spend £16,000 per mile over a line of only seventy-five miles over a country where excellent roads already exist. It is this consideration that outweighs the many advantages which a line to the river over the hills undoubtedly possesses.

But apart from railways altogether, there is another great scheme before the public, which is enthusiastically advocated by the people in the south. That is to make a new mouth to the Murray, which would enable ocean-going vessels of large tonnage to pass in and out without difficulty or danger. The harbour of Goolwa on the river is large and commodious, and has a sufficient depth of water to enable a considerable fleet of large vessels to lie safely, if once they were inside. This harbour is not more than a mile from the ocean in a straight line across the sandhills. The scheme proposed is to cut a canal through the sand of sufficient depth and width to permit large vessels to pass in and out. The question is one of engineering and cost; and these two are closely connected. Engineers say that if a cutting were made the fall in the river would be quite sufficient to scour the channel and to keep it always clear. The great difficulty, however, is the fact that the mouth of the canal would have no protection against the full swell of the Southern Ocean, and that there



ADELAIDE PLAINS FROM MOUNT LOFTY RANGES.

would be times when it would be impossible for vessels to attempt the passage in safety. The answer to this is, that such times are by no means frequent, and that when the weather was too stormy for vessels to make the entrance, they could run for Victor Harbour, a few miles off, where they could lie safely until the weather moderated. The Engineer-in-Chief cannot recommend the Government to undertake the work of making a canal; but the people in the South have obtained an Act to enable a private company to undertake the work, and Mr. B. Boothby, C.E., has prepared plans showing how it can be carried out at a moderate cost.

Whether the scheme is feasible, it is not my business to say, as it is really a matter of engineering; but if it is, and is carried out, it will be one of the greatest works ever accomplished in the Colony. It will be the creation of a new port, and will secure the upper river trade to an extent which it is impossible to estimate. There is untold wealth, agricultural, pastoral, and mineral, in the immense river territory, which cannot be fully developed in consequence of the cost of conveying the produce to a market which would be developed within a very few years if the river were opened to sea-going vessels.

If is not too much to say that we have not turned the one great river we possess to full account as a highway for the conveyance of produce. A port at its mouth which would receive large vessels would more than anything else enable us to use the river as we ought; and if the southern colonists are successful in their bold and spirited scheme, they will do more for the substantial prosperity of the Province than has ever yet been accomplished. Without being over-sanguine, I believe a great future lies before the Colony in the fuller development of the river trade.

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CHAPTER XVIII.

THE TRANS-AUSTRALIAN TELEGRAPH.

Origin of Idea — Stuart's Travels — Cable Company's Proposal — Commander Noel Osborn — Act passed for Construction — Mr. Todd's Preparations — Difficulties of the Undertaking — First Failures — Mr. Patterson's Expedition — Mr. Todd's Expedition — Completion of Work — First Telegram — Banquet in Adelaide to celebrate Completion of Work — Great Success — Conflicts with Natives — Lines and Cables to New Zealand and Western Australia.

PROBABLY nothing that has been done during the history of South Australia has more strikingly brought out the enterprise of the Colonists than the construction of the Overland Telegraph. A few years ago the heart of the continent was a *terra incognita*, about which there were strange dreams and speculations. Now a well-built line of telegraph has been carried nearly 2000 miles from Adelaide in the south to Port Darwin in the north, and this great work has brought the whole of Australia into telegraphic communication with every part of the civilized world. We owe this great work primarily to Charles Todd, C.M.G., the accomplished and indefatigable Superintendent of Telegraphs in the Colony. I purpose giving here a brief account of the construction of this bold undertaking.

So far back as 1857, Mr. Todd brought forward the question of connecting Australia with the old world by means of telegraphic communication. The first idea was to connect Java with the Gulf of Carpentaria by a submarine cable, and Java with Singapore. Queensland had pushed her lines to a considerable extent northwards, and they could easily have

been carried to the Gulf of Carpentaria. After Stuart's successful journey across the continent to South Australia, the thought occurred to Mr. Todd that a land line from Port Augusta to North Australia was quite practicable and might be constructed at a moderate cost. He brought the question officially before Sir R. G. MacDonnell, the Governor, in 1859, who immediately communicated with the Secretary of State on the subject. The question, however, slept for some years, and was revived and brought into prominent notice again in 1869, when various schemes were suggested for carrying out the scheme. Amongst these, however, three obtained prominence; the first to join the North-West Cape to Ceylon, and the second to connect it with Java; and a third, and perhaps more favourite scheme was to connect Normanton on the north-east with Java.

At this time the British-Australian Telegraph Company was launched, and proposed to bring the cable to our doors without subsidy or guarantee. Fortunately at that time Mr. R. Dalrymple Ross, a gentleman who had been connected with the Imperial Commissariat, and who had taken a lively interest in opening out North Australia for purposes of trade with British India, was in London, and he wrote an able letter to the *Times*, pointing out the importance of opening our facilities for trade between Australia and India. He also demonstrated the probability of a telegraph cable, connecting Australia with India and Europe, becoming in a very few years highly remunerative to the company who would undertake it. Mr. Ross placed the whole advantages of the scheme very clearly and forcibly before the British public, and his letter had much to do with hastening the progress of the work. There was a cable already to Singapore, and a land line from Batavia through Java to Banjoewangie; and the plan of the British-Australian Company was to lay a cable from Singapore to Batavia, and from Banjoewangie to Port Darwin, with a land line thence to Normanton. It was, however, by no means a settled fact that the cable would come to Port Darwin at all. There was a doubt as to the land route thence to Normanton, which, owing to the nature of the country, would be difficult

to construct and expensive to maintain. There was, therefore, a feeling in favour of leaving out Port Darwin and carrying the cable direct to Normanton.

In order to make all necessary inquiries, Commander Noel Osborn was sent by the Company to Australia. This gentleman came on to Adelaide, and Mr. Todd, in repeated interviews with him, put the advantages of a line from Adelaide to Port Darwin before him over one through Queensland. He showed that our line would be much shorter, and that Queensland could easily tap it by a short line from Normanton. Mr. H. B. T. Strangways, then at the head of the Government in South Australia, took the matter up very warmly, and offered, on behalf of the Government, to construct an overland line from Port Augusta to Port Darwin. The British-Australian Company would therefore finish their work when they landed their cable at Port Darwin, and they would escape all the trouble and cost of carrying a land line through a difficult and comparatively unknown country. Commander Osborn saw that this proposal would relieve the Company of what was likely to prove their greatest difficulty, and he accepted it. A Bill was introduced into Parliament to authorize the construction of the line, and though there was a change of Ministry at the time, public feeling was so strong in its favour that the Bill was carried with something approaching to enthusiasm. Our Government pledged themselves to have the line completed in eighteen months, and open for traffic on January 1st, 1872.

The Colony was thus committed to the work, and it was only then that Mr. Todd, who, as the head of the department, was responsible for carrying it out, began to realize the responsibility he had undertaken. Only a few months before the duties of Postmaster-General, in addition to the management of the Telegraph Department, had been transferred to him. With increased official duties pressing very heavily upon him, he had undertaken to carry a line of telegraph nearly 2000 miles long through a country, the greater portion of which was unknown, and for an extent of 1350 miles unsettled by white men. Stuart, indeed, had passed over a barren strip of this country, and had thus proved that its passage was practicable

in certain seasons of the year to a small and lightly equipped party. For hundreds of miles this country was entirely bare of timber, and posts would have to be carted over the whole distance where there were no roads. More than this, all the wire was to be transported from England by ship, and then carted over the distance. Insulators were to be brought from Berlin; and when the order for them went home, the Franco-German war had broken out, and serious delay occurred in getting the insulators through Denmark. Mr. Todd soon discovered, too, that it would be necessary to have iron posts for a great portion of the line, and these had also to be imported from England. Some of the materials were landed at Port Augusta, and some at Port Darwin, so that the work might be simultaneously commenced at each end.

To convey them from the seaboard, an extensive system of dray parties had to be organized. Horses and carts had to be purchased, men selected, tents and provisions conveyed to the very heart of the Continent. Two thousand miles of posts and wire had to be erected, and all this within eighteen months from the time the contract was signed. More than this, a practicable route was to be selected; and Mr. John Ross, a clever and an experienced bushman, with a flying expedition, was dispatched to run down the country and mark out the route. Various sections of the line were let under contract; the Government retaining those most difficult in their own hands. The first northern section started from Port Darwin as a basis, and the next from the Roper River. Parties were to work from each of those points and meet in the centre. The southern portion, starting at Port Augusta, was also let on contract; and the central, which the Government themselves undertook, and which presented the greatest difficulty, was entrusted to a fine lot of young men, who entered upon their work with great enthusiasm.

When all was ready for a beginning, the Government parties started from Adelaide in August, 1870, and the first pole was planted at Port Darwin about the middle of September, and the first at Port Augusta on the 1st October, 1870. Having organized all his forces, and made provision for ob-

taining all his necessary material, Mr. Todd started northward as far as the Peake, which had been chosen as a central base of operations. There he met Mr. Ross, and made final arrangements for the disposition of his forces. The thing was soon fairly started,' and Mr. Todd returned to Adelaide to watch with anxiety the progress of the work, and to arrange for the continuous dispatch of materials and provisions as they were needed.

For a time everything went on very successfully, and there was every prospect of the work being carried out within the contract time. It was supposed that the northern end, starting from Port Darwin, would present fewest difficulties, but here was the only serious breakdown. Early in July, 1871, when it was hoped that a considerable portion of the northern section had been completed, we were startled and disappointed by Mr. W. McMinn, the Government overseer, returning to Adelaide with the melancholy news that the contractor's expedition there had collapsed; and that, in virtue of the power given to him, he had terminated the contract. This was a heavy blow and sore discouragement. The other parts of the line were being constructed with great success, and no one dreamt of a failure at the Port Darwin end. Besides this, only six months remained of the contract time, within which the Government were pledged to finish the work.

In this emergency, the Government dispatched Mr. R. C. Patterson, assistant engineer, with a large party of men and an ample supply of materials, to complete the work. Mr. Patterson and Mr. Todd were strongly in favour of sending the new expedition to the Roper River, and forming a new base of operations there. They were overruled, however, and the fatal mistake was made of sending the expedition to Port Darwin. It arrived at an unfortunate time; the stock died, and it was found almost impossible to get the materials transported. Mr. Patterson sent back a melancholy report from Port Darwin, which cast a gloom over the whole Colony. He did what ought to have been done at first—dispatched a vessel with his materials to the Roper, and in course of time followed. With reference to this period of bitter disappointment, Mr.

Todd writes:—"Numbers of horses and one-third of the bullocks died, and the loads had to be lightened or abandoned on the road before the Katherine was reached, and further on it was necessary to sink wells before the teams could advance with safety; and ere this was accomplished, down came the rains, and a monsoon of unusual severity set in almost before the work could be renewed, and stopped all further progress for months."

The men were locked in by floods, chafing, and fretting, and eating their hearts, during their enforced idleness. The precious time was passing away. The whole out-look at that time was very black; and Mr. Todd needed all his bright, hopeful, and sanguine spirit to sustain him.

At this very juncture, in the midst of our bitter disappointment, the cable fleet arrived at Port Darwin. The shore end of the line was fixed, and the vessels began to pay out the cable to Banjoewangie, and the work was completed and communication established with London in November. One of the first messages flashed along the line was the humbling one for us, "South Australian land line not nearly completed." Some of our neighbours began to taunt us with our vanity and foolish temerity in undertaking a work which we had not the ability to complete, instead of leaving it to one of the other Colonies. With the exception of a few people in Melbourne, we found none to offer us a word of sympathy, or to give us a word of encouragement.

At this time, when things looked darkest, when Mr. Patterson wrote in a somewhat desponding tone, reporting his losses and asking for the immediate dispatch of large reinforcements, the Government, who never lost heart, and who were determined to complete the work whatever it might cost, asked Mr. Todd himself to proceed to the scene of action, and do what was necessary to close up the work. This was a serious undertaking for a gentleman who had no acquaintance with bush life; but he accepted the duty at once. He had a deep personal interest in the completion of the work which had been suggested by himself, and he felt that his reputation to some extent depended on its being successfully carried out.

With his usual energy and enthusiasm, he collected large reinforcements, which he dispatched in well-appointed steamers to the Roper River, he sailing in one of them.

The very day before he started, he received the welcome intelligence that communication had been established with the MacDonnell Ranges, that the central portion of the line was finished, and that the section beyond was making rapid progress. But for the unfortunate break-down in the Northern Territory, the conditions of the contract would have been fulfilled almost to the very letter.

On reaching the mouth of the Roper in the *Omeo* steamer, Mr. Todd was met by Mr. Patterson. The steamer passed up the river, Mr. Todd giving the Captain an indemnity against damage on the part of the Government if he would force the bar, and they at length reached the jetty which had been constructed for unloading the vessels. The materials and horses were landed, but their faith and patience were again to be tested. All through February and March heavy continuous rains fell, and the party could do nothing. As soon, however, as the fine weather set in, they loaded up teams and started on their final work—Mr. Patterson again taking charge of the working parties. Mr. Todd, having seen a commencement again made, went round to Port Darwin to complete the necessary arrangements there—to inspect the telegraph offices, and to make a thorough inspection of the line between Port Darwin and the Katherine. Unfortunately he found that a great number of the poles had suffered from the ravages of white ants, and he arranged to have them replaced with iron poles. Having accomplished all this, he returned to the Roper, which he reached on May 31. The work now went on very successfully, and Mr. Todd resolved to return to Adelaide overland along the whole line of telegraph that he might judge for himself of the manner of its construction. He arrived at Daly Waters Station on June 22.

Between that point and Tennant's Creek there was a gap in the line still to be finished. Until it was completed, Mr. Todd established a pony estafette, to ride express with messages and keep up a weekly communication between Adelaide and

the Old World. He telegraphed to our Agent-General in London, informing him of the progress of the work and its approaching completion. Several messages came through from London on the next day, and then there was silence for some months. The cable between Port Darwin and Java had broken, and it was a long and weary time before it could be restored. This was not altogether unfortunate for us. The Cable Company had threatened to enforce the penalties for non-completion of the contract within the specified time; but when their own cable broke, we heard no more of these penalties. Meanwhile the gap was gradually covered by the line, and a field operator accompanied the working parties and kept up constant communication with Adelaide. On August 22, 1872, the two ends of the wire were joined, and the construction of the telegraph line across the continent was an accomplished fact. After all our difficulties and heart-breaking disappointments, the work was done. On the day the wires were joined and messages were flashed direct between Adelaide and Port Darwin, we were rewarded for all our money, labour, and anxiety. In lecturing on this work, Mr. Todd said:—"Thus the great work, notwithstanding all disasters and mishaps, was successfully completed within two years; and he thought he might with confidence assert that no line passing through a similar extent of uninhabited country, where the materials had to be imported and carted over such long distances, or country representing similar natural obstacles, had been constructed in the same short space of time." It should be borne in mind, too, that this great work was undertaken at the sole cost of a people numbering at the time less than 200,000 souls. The audacity of the enterprise was no less than the success with which it was carried out.

When the work was completed, Mr. Todd was at Central Mount Stuart, the very heart of the continent, equidistant from north and south; from east and west. There was something singularly appropriate in his receiving the news of the completion of the great work in the centre of the continent. It was evening when the first message passed through, and immediately he received kind congratulatory messages from the

Government, and all sorts of people, expressing their joy at the completion of the work which he suggested, and which he did so much to carry out. These messages came flashing through, and he replied to them in high delight, until from sheer weariness of hand and brain he had to wish his friends in Adelaide "Good night," and shut off the communication. If he had not done so, he would have been kept receiving and answering messages all through the night.

Mr. Todd now hastily pursued his journey to Adelaide, accompanied by Mr. Knuckey, a fine young fellow, who had shown himself to be one of his most efficient and faithful co-adjutors in the work. He was followed by his party, and he and they received a cordial welcome in the city. A grand banquet was given to them in the Town Hall, presided over by His Excellency Sir James Fergusson, Bart., who gracefully announced the fact that, in recognition of the importance of the work achieved, Her Majesty had conferred on the Chief Secretary, Mr. Ayers, the honour of K.C.M.G., and on Mr. Todd and the Agent-General of the colony in London, Mr. Francis S. Dutton, the honour of C.M.G. At that banquet messages were sent from the room to London and Washington, and answers received in due course.

When the work was completed and the line successfully opened, its immense importance was at once recognized. Some, indeed, who were envious at our success and unjust in their criticisms, asserted that the line was little better than a sham—that it was ill-constructed, and that it would tumble to pieces in a few months. Mr. Todd indignantly refuted these mendacious statements. He had travelled over the whole line, and he stated that it was well and substantially built; and the result has shown that he was right. It has been in operation upwards of three years, and we have never yet had seven days' interruption. Heavy storms have occasionally torn down portions of the line, but these have been replaced in a day or two. Indeed, communication between Australia and England has suffered much more from breaks in the cable than from any faults in our land line.

It was feared that the line might suffer from the wild

natives in the interior, who, from malice or ignorance, might cut the wires. Singularly enough, however, there has been no instance of their doing so. They seem to have a wholesome dread of the telegraph. During the process of building, the operators gave several of the curious blackfellows electric shocks, which alarmed them beyond measure, and vividly appealed to their imagination. They learnt to associate the peculiar sensation caused by the shock with the line, and this has prevented them interfering with it. The terror caused by reports of "whitefellow's devil" spread like wildfire amongst the timorous savages. They have attacked the operators at the stations, and sometimes with fatal consequences, but they fight shy of the wires. I cannot do better than conclude this chapter on the Overland Telegraph with a quotation from Mr. Todd's lecture as reported in the newspapers:—"The work which they undertook and successfully consummated, though single-handed, had, it is true, proved a costly one—far more costly than they anticipated; but repayment would be speedy. To take one fact—without the telegraph it would have been impossible for South Australia to have disposed of the large surplus produce of last harvest, except at such a sacrifice as would have ruined their farmers. With the telegraph, the wants and prices of all the markets of the world were known to them without delay; and, beyond that, they possessed the means of securing ships from every quarter, till their ports were crowded with the finest fleet ever seen in South Australian waters, ready to carry away their golden grain to the millions who were eager to consume it. He was assured by merchants, most competent to form an opinion, that the telegraph had realized for the Colony at least £150,000, in the advanced price it had enabled us to obtain for our wheat. The telegraph might check unhealthy speculation, but it made commerce safer—tended to equalize prices, put the farmer, merchant, and consumer on a footing of equality, and by the more speedy liberation of capital it cheapened all commodities and the necessaries of daily life."

I may say that, in addition to the advantages of the telegraph thus referred to by Mr. Todd, its construction has led to

the opening out and settlement of the interior country, as nothing else could have done. Land has been taken up for grazing far beyond what only a few years ago was thought possible. It has been discovered that Central Australia is not such a bleak and barren desert as it was once thought to be. But the benefits secured by the overland line are not confined to this Colony. Victoria uses it more largely than all the other Colonies put together; indeed, I believe, she sometimes gets the credit of having undertaken and constructed the work. Reuter's agency has its head-quarters in Melbourne, from which all public messages are sent; and this has given the impression that the line belongs to Victoria instead of to South Australia. Victorians themselves would be the last to grudge us the credit to which we are entitled for our pluck and enterprise; but English people, in their ignorance of Australian Geography, persist in regarding Victoria as Australia, instead of keeping it in mind that it is the smallest Province in the whole of Australia, though perhaps the most wealthy.

There are now only two great works necessary to bring the whole of these Colonies of the South into telegraphic communication with the whole civilized world, and these are about to be completed. The most important is a cable to connect New Zealand with Australia; and a contract has already been signed by the New Zealand Government and the English Company for this work, which will be finished in the course of a few months.* The second is a line to connect South and West Australia; and this too is in process of construction. The Western Australian Government are bringing on their line from Perth to Eucla—the boundary township in the Great Australian Bight; and our Government are carrying a line to join them there. When these two works are finished, all the Colonies will be in communication with the Old World and America. It is our pardonable boast that no country in the world, with such a small population and such limited

* The New Zealand-Australia Cable was successfully laid and completed early in February 1876, and communication opened to the public on the 15th of that month.

resources, has done as much in the way of telegraphic extension as South Australia has done.

In a work which professes, as this does, to give accurate information respecting a Colony which hitherto has been but little known, I thought it desirable to give a somewhat lengthy account of a work which, had it been accomplished by an old and long-established people, would have been regarded as a great undertaking, but when carried out by a mere handful of people, in spite of many and grievous discouragements which could not be foreseen or guarded against, assumes an importance which cannot very well be over-estimated. The bulk of the men who carried it through were young-born and bred South Australians; and the brave way in which they set themselves to the work, and encountered and over-mastered all difficulties, shows that the new generation, born and brought up here, have lost none of the high qualities of courage, energy, and endurance which have always characterized the Anglo-Saxon race. This is the class of men whom we may safely trust to advance the future progress of the Colony—men full of pluck, patient and hopeful under difficulties, and fruitful in resources in the face of danger or unforeseen obstacles. The construction of the Overland Telegraph may be regarded as a test of the capabilities of young Australia, and as a satisfactory answer to the question whether they inherit the high qualities which have made their fathers great.

CHAPTER XIX.

EXPLORATION.

Captain Sturt — Mr. E. J. Eyre — Eyre's Journey to King George's Sound — J. MacDouall Stuart — Victoria Exploring Expedition: Death of Burke and Wills — Colonel Warburton, John Forrest, Mr. Gosse, and Mr. Lewis — Hon. T. Elder's valuable Assistance in Work of Exploration.

WHEN the first colonists settled in South Australia, but little was known of the immense territory which had been ceded to them by the Crown. Captain Sturt's adventurous voyage down the Murrumbidgee and the Murray (to which I have referred elsewhere) led to the discovery of the fine country which is now so well settled, and where the early colonists selected their homes. It was soon found that the new Colony was admirably adapted for pastoral pursuits; and the country within some fifty miles of Adelaide was taken up. Enterprising men went out farther into the interior to look for new country. The whole of the land more than fifty miles north of the metropolis was a *terra incognita*. Our first explorers were young men in search of good country for sheep runs. Great hardships were often endured by these men, and not unfrequently valuable lives were sacrificed in the search for country. The explorers had to be on their guard against the natives, some of whom were crafty and cruel, and resented what they regarded as an unwarrantable intrusion on their territory. But the want of water in a hot and barren land was often a worse enemy than a whole tribe of blacks. To tell of the sufferings endured by some of the first explorers would occupy more space than I can afford in this work. For the same reason I

cannot attempt to give any account of the great explorers which the other Colonies have produced.

One of the first and bravest of South Australian explorers was Edward John Eyre, who occupied the position of Resident Magistrate and Protector of Aborigines at Moorundee, and who subsequently became Governor of Jamaica, where it is admitted he committed some mistakes of administration, for which he paid more than an adequate penalty. Mr. Eyre was an able man and a splendid bushman. He had large experience in conducting expeditions in charge of stock from one Colony to another, and his humanity towards and care for the natives, while he held the office of Protector, were generally recognized.

On behalf of a number of gentlemen in South Australia, Mr. Eyre undertook the leadership of a party to explore the unknown country lying between this Colony and Western Australia. The funds were subscribed by the projectors of the expedition—Mr. Eyre himself contributing in money and horses more than half the amount. The first object was to push on northward, and then strike off in a westerly direction. The expedition consisted of E. J. Eyre, as leader; E. B. Scott, assistant and companion; J. Baxter, overseer; Corporal Coles, T. Houston, R. McRobert, and two native boys. They started from Adelaide on June 18th, 1840, in an imposing cavalcade—several ladies and gentlemen accompanying them some short distance on horseback. The Government had placed at their disposal a small cutter, to convey their stores to the head of Spencer's Gulf and Streaky Bay. Unexpected difficulties prevented their pushing their way northward, and the party proceeded to Streaky Bay. This was made the base of operations; and a month was employed by Mr. Eyre and one of the natives in a fruitless attempt to get beyond the Great Australian Bight, in which he lost three of his horses. Prudence would have suggested an abandonment of the expedition and a return to Adelaide. Mr. Eyre, however, felt that he must do something to justify the confidence placed in him; and while pondering over the situation, he formed the bold resolution to land his stores, send back his party in the cutter to Adelaide, and, with

one white man and three blacks, push his way through to King George's Sound, in Western Australia, or to perish in the attempt. He fully knew the danger which he was about to incur; but his overseer, Baxter, was willing to accompany him, and the perilous journey began.

About ten years ago Henry Kingsley told the story of that remarkable expedition in the pages of *Macmillan's Magazine*, in his own graphic style. Poor Eyre suffered the greatest privations; but he bore up with a brave heart, until his faithful overseer was cruelly murdered by two of his natives, and then he almost broke down. The natives deserted him after murdering his overseer and robbing him of a considerable quantity of his provisions, and he was left alone with a little black lad as his only attendant. He was not able to bury the body of Baxter, but wrapped a blanket round it and left it where it fell, and rushed "from the melancholy scene, accompanied by Wylie (the boy), under the influence of feelings which neither time nor circumstances will ever obliterate." Mr. Eyre adds in his journal:—"At this time I had nothing on but a shirt and a pair of trousers, and suffered most acutely from the cold; to mental anguish was now added intense bodily pain. Suffering and distress had well nigh overwhelmed me, and life seemed hardly worth the efforts necessary to prolong it." He appeared to be now alone in the world. Two out of the three natives had betrayed the confidence he placed in them, and murdered his only white companion. A single act of treachery on the part of his native boy, Wylie, might have ended his days, and left his bones to whiten in the desert; but the poor boy was faithful to the last. What a picture for an artist would Eyre and Wylie—representatives of the highest and lowest forms of humanity—pushing on their weary way over hitherto untrodden deserts, afford! Hungry, thirsty, fainting, and naked, they pushed on, until at last they reached the little town of Albany, in King George's Sound, where they had been expected, but long given up for lost.

In his journal Mr. Eyre tries to describe his feelings on terminating his journey. He says:—"For a moment as I stood gazing at the town below me, that goal I had so long

looked forward to, had so laboriously toiled to attain, was at last before me, a thousand confused images and reflections crowded through my mind, and the events of the past year were recalled in rapid succession. The contrast between the circumstances under which I had commenced and terminated my labours stood in strong relief before me. The gay and gallant cavalcade that accompanied me on my way at starting, the small but enterprising band that I then commanded, the goodly array of horses and drays, with all their well-ordered appointments and equipment, were conjured up in all their circumstances of pride and pleasure; and I could not restrain a tear as I called to mind the embarrassing difficulties and sad disasters that had broken up my party, and left myself and Wylie the two sole wanderers remaining at the close of an undertaking entered upon under such hopeful auspices." This perilous journey was of little use from a commercial point of view. The country passed over was worthless for pasture, although the country this side of Fowler's Bay has been taken up for pastoral pursuits. But Eyre's bravery, endurance, and perseverance are none the less to be commended on this account.

Thirty years after this journey was made, it was repeated from the opposite side by Mr. John Forrest, a fine young West Australian explorer, who with a small party passed over it with but little inconvenience or difficulty. Mr. Forrest told me that again and again he camped on Eyre's old camping ground, which he recognized at once, and which seemed to have remained undisturbed from the time he and Wylie left it. I shall have something more to say of this brave young West Australian explorer, who in crossing the continent in the latitude where Eyre hoped to have crossed it when he first started from Adelaide, endured very great privations.

The next explorer of note who attempted to penetrate the mystery of Central Australia was Captain Sturt, a man whose name should never be mentioned without respect. He had won his spurs as an explorer, but the heart of the continent had a fascination for him, and he was resolved to find out what it contained. There was an idea prevalent that somewhere in

the centre would be found a great inland sea, and Captain Sturt determined that he would prove or disprove this idea by actual observation. In 1844 he started, with a well-equipped party, on an exploration to the north. His surgeon was Mr. J. H. Browne, now a wealthy squatter, and his draughtsman, Mr. J. McDouall Stuart, who was destined to be the first white man who travelled across the continent from south to north. His journey would be worth describing if I had space here to describe it. No party ever suffered more than this did. For six months they were shut up far away to the north, able neither to advance nor retreat, in a temperature averaging 100 degrees. Again and again Captain Sturt and Mr. Browne struck out in various directions, trying to find a practicable outlet from the miserable trap into which they had fallen. The water in the creek on which they were camped was gradually disappearing, and the prospect was a very gloomy one. One of the party, Mr. Poole, became very ill, and the leader of the exploration resolved to send him and Mr. Browne back to Adelaide; but Mr. Browne resolutely resisted, and wished to remain to share the fate of his intrepid chief. Poor Poole sunk under privation and disease, and was buried in the far distant bush, another martyr to scientific discovery. Captain Sturt still refused to return. At length sickness broke down the little remaining strength of the party; Captain Sturt became so feeble that he lost the use of his limbs. Sturt succumbed at last, and the party had reluctantly to retrace their steps. On reaching Murrundee the party rested for a while, and Mr. Browne pushed on to Adelaide to announce their return. In 1866, after an absence of eighteen months, Captain Sturt arrived in Adelaide. Mr. Foster, to whom I am much indebted for this chapter, says in his work on South Australia:—"The results of an exploring expedition depend so much upon the nature of the season when it is undertaken that it is difficult to say whether or not Captain Sturt might have succeeded in crossing the continent had he followed up some of the advantages he had gained. Cooper's Creek, which he discovered, is now found to be the key to the route across to Port Darwin and the Gulf of Carpentaria. Had he traced it further in its easterly course, it

must have brought him to the Barcoo, and from thence the country would have been open to him either to the north or to the north-east."

For a while after Sturt's journey South Australian exploration appeared to rest; but several expeditions were undertaken by the Government between 1857 and 1859, without adding very much to our knowledge of the interior. In 1859, Mr. Stuart, Sturt's former companion and draughtsman, commenced that grand series of exploring journeys which, after many difficulties and disappointments, at length terminated so successfully. In the first instance he went out as the agent of Messrs. Chambers and Finke, gentlemen interested in pastoral pursuits; but the tale he had to tell on his return from these journeys induced the Government to fit out an expedition for further exploration of the continent, of which they gave Mr. Stuart the command. He failed in his first attempt; but the Government had confidence in his prudence and determination, and they sent him out again. Again he failed, simply because under the circumstances it seemed impossible to succeed. For a third time he offered his services to the Government, which were again accepted. He had an excellent party fitted out at the expense of the Government, consisting of himself in command; W. Kekwick, second; F. G. Waterhouse, naturalist; F. W. Thring, third officer; W. P. Auld, assistant; S. King, J. Billiat, J. Frew, H. Nash, and J. McGorgery. They pushed on from the terminus of Stuart's former journey, and on the whole the difficulties were fewer than they anticipated. On July 10, 1862, they struck the Adelaide River, and Stuart then knew that his triumph was near. In his journal he says:—"July 24. Started twenty minutes to eight o'clock, course north. I have taken this course in order to make the sea-coast as soon as possible, which I suppose to be distant about eight and a half miles; by this I hope to avoid the marsh. I shall travel along the beach to the north of the Adelaide. I did not inform any of the party except Thring and Auld that I was so near the sea, as I wished to give them a surprise on reaching it. . . . At eight and a half miles came up in a broad

valley of black alluvial soil, covered with long grass; from this I can hear the wash of the sea. . . . Stopped the horses to clear the way whilst I advanced a few yards on to the beach, and was delighted and gratified to behold the water of the Indian Ocean in Van Diemen's Gulf before the party with the horses knew anything of its proximity. Thring, who rode in advance of me, called out, 'The sea!' which so took them all by surprise that he had to repeat the call before they understood what was meant; hearing which they immediately gave three long and hearty cheers. . . . Thus have I through the instrumentality of Divine Providence been led to accomplish the great object of the expedition, and to take the whole party through as witnesses to the fact, and through one of the finest countries man would wish to pass—good to the coast, and with a stream of running water close to the sea."

It is impossible to over-estimate the value of Stuart's last and crowning expedition. It threw daylight upon a country of which little or nothing was previously known; it showed that it was possible to cross this country, and in ordinary seasons to find water at easy distances; and it led to the commencement of the great work of the transcontinental telegraph line, which has brought the whole of the Australias into daily communication with the old world. Mr. Stuart was rewarded by the Government and the Parliament for the magnificent work he had accomplished; and full of honours he returned to the old country to end his days. He received the Gold Medal of the Royal Geographical Society for his important discoveries; but he did not live long to enjoy his honours and rewards. The hardships he suffered told eventually even on his iron constitution. His name, however, is imperishably connected with exploration in Australia. He led the way which it is comparatively easy now to follow. He was the pioneer in a land which had never before been trodden by the foot of white man; and to-day there are thriving cattle stations where a dozen years ago Stuart urged his weary way amidst the unbroken stillness of Nature, when it was doubtful whether he would succeed or lie down in the desert to die.

It does not come within the scope of this work to describe at length the melancholy and disastrous history of the expedition fitted out by the Victorian Government to find a way across the continent, and of which a brave man—Richard O'Hara Burke—was the leader. The Burke and Wills expedition was sadly mismanaged, and resulted in the sacrifice of the lives of the leaders, who, almost within sight of home, lay down in the bush and died, utterly worn out and exhausted. These men crossed the continent to the shores of the Gulf of Carpentaria, and returned as far as Cooper's Creek, where their strength gave way, and they fell vanquished in the strife by hunger, thirst, and fatigue. The Victorian Government nobly sent out an expedition to bring back the remains of these brave men to Melbourne for sepulture, and, strangely enough, Mr. A. Howitt, the officer in charge of the precious burthen, arrived in Adelaide on the very day the colonists here were welcoming Stuart on his return from his successful journey.

Our most recent exploration was that of Col. Warburton, who was commissioned by the Hon. T. Elder (who has shown a spirit of large-hearted enterprise, not only with reference to exploration, but in relation to the progress of the Colony in various ways) to search for cattle country to the west of the Telegraph line, in the centre of the continent. The gallant Colonel was an old explorer, and in spite of his many years he undertook the trying work. Several camels were placed at his disposal, and he had a small and carefully selected party to accompany him. He started from one of the stations on the Telegraph line in high hope for the west. Many months passed without any news being heard of him, and grave misgivings were felt as to the fate of the expedition. At length, however, after a silence of something like twelve months, news was heard of him. One of his party turned up at one of the most northern stations in Western Australia and reported that the brave old Colonel was camped many miles away, with no provisions but camel's flesh—and very little of that; ill, wasted to a shadow, gaunt, and half-starved. Immediate assistance was sent to him, and it was just in time. The

party could not have survived many days longer. Nothing could exceed the kindness and humanity of the Western Australian Government and people. The Chief Secretary, the Hon. W. Barlee, made the expedition his special care, supplied them with all that was necessary for their comfort—and that included almost everything—and then sent them on to Adelaide, where the gallant Colonel was received with enthusiasm. He subsequently visited England, received the Gold Medal of the Royal Geographical Society, and was made C.M.G. in 1875.

Happily this Colony had an opportunity of returning the kindness of our western neighbours to Colonel Warburton and his party. I have already mentioned the fact that Mr. John Forrest, a young West Australian, some years ago travelled from King George's Sound to Adelaide on the route which Mr. E. J. Eyre travelled thirty years before. Proud of his success, the Western Australian Government commissioned him again to find a way from the westward to South Australia, in a latitude nearer the centre of the continent; in fact, somewhere on the line which Colonel Warburton contemplated when he set out. Mr. Forrest had a very small party, consisting of his brother Alexander, two assistants, and two black fellows. This small party endured great hardship, and were exposed to many dangers. The country through which they passed was wretched in the extreme until they got within a few hundred miles from the Telegraph line. Nothing but indomitable pluck and careful management on the part of the leader could have saved the party. But at length, after four months' weary travelling, they struck the line, and ran it down until they came to a telegraph station, where they received from the master in charge such a welcome as brave men were entitled to. The news of their safe arrival was telegraphed to Adelaide the same day, and caused the greatest delight to the people here. It was resolved that they should have a public reception, and that something should be done to show how we appreciated the kindness of the West Australian people to our veteran explorer, Colonel Warburton. The day of Mr. Forrest's

entrance into Adelaide was kept as a general holiday. Thousands of persons crowded into the city from all parts of the Colony; the streets through which the little party passed were gaily decorated; they were greeted with enthusiasm as they rode in their travelling equipage on their poor lean horses; and congratulatory addresses were presented to them. Not even when the Duke of Edinburgh entered Adelaide was there a greater, or a more enthusiastic, crowd to welcome him.

We have had other explorers of late years also, who, through no fault of their own, have been less successful than those we have referred to. Mr. Gosse and Mr. Lewis have made some valuable discoveries of country to the west of the Telegraph line, and they have added considerably to our knowledge of the country; but their discoveries have not been of a character so vividly to strike the imagination as those I have briefly attempted to describe. They have had their uses, however, and their value will be acknowledged in time to come.

As a Colony we are very proud of what we have accomplished in the way of exploration. No community so small has ever done what we have in this respect, and the cost has been very trifling to the Colony. Our explorers soon learnt the important lesson, that to be successful they must travel lightly, with as few impedimenta as possible. Some of the earlier expeditions broke down by their own weight; and it was found that a lightly equipped party of about half-a-dozen men of the right sort could accomplish a great deal more than one provided on a more ambitious scale. Poor Burke discovered this, and he left his cumbersome party behind, and made a dash across the continent with only two or three companions.

Australia has a beadroll of martyrs to scientific exploration of which any country might feel proud; and we feel proud of them. Their material rewards have been but little, but their names are written in ineffaceable letters on the annals of the Colony, and future generations will point to them as amongst the bravest and noblest of Australia's sons. Amongst the

Colonies who have furnished some of the bravest of these, South Australia occupies a prominent place. Indeed, whenever a man has been needed for any special work, requiring peculiar gifts and qualities, that man has been forthcoming; and in nothing has this been more manifest than in the number and character of our explorers.



PRIZE COMBING MERINO RAMS FOR 1873 AND 1874, FED ON UNCULTIVATED LANDS ONLY (*Weight of Fleece* 15¾ *and* 16½ *lbs.*), BRED BY JOHN MURRAY, ESQ., MURRAY VALE, MOUNT CRAWFORD, SOUTH AUSTRALIA.

CHAPTER XX.

COLONIAL INDUSTRIES.

Staple Industries — Wool, Wheat, and Copper — Meat Preserving — Manufacture of Leather — Woollen Manufactures — Wine-making; Vineyards — Other Industries — Chamber of Manufactures.

I HAVE already mentioned the three great staple industries of the Colony which over a series of years have been the source of our wealth—pastoral, agricultural, and mining pursuits. All these are established on a permanent basis, and bid fair to enrich us for ages to come. The immense tracts of country which lie far away in the interior must be devoted to pastoral occupation with yearly increasing flocks and herds, the source of untold wealth to the squatters or sheep-farmers. The quantity of agricultural land taken up for industrial settlement is increasing year by year, and there are millions of acres which, with the manifest changes now taking place in our climate, will yet be surveyed and purchased for agricultural industry. All that is wanted to open out a large portion of this valuable territory is facile means of communication with a market. Unless carriage of produce be made cheap, we shall soon reach the boundary beyond which wheat cannot be profitably cultivated. The Colony is awakening to the importance of this subject, and there is a determination to build light and cheap lines of railway to various parts of the province, by which the produce can be carried at a moderate rate. Wheat-growing is certain to extend, and we shall have to look more steadily to the old countries of Europe for a market. As the shipping charges for freight to England

amount to something like half the value—sometimes considerably more—of the grain as sold here, every means will have to be tried to cheapen carriage within the Colony. Our great copper mines on the Peninsula show no signs of failure, but are as rich now as ever they were. In addition to these there are vast tracts of country which are full of minerals, and which will be developed as mining property so soon as we can get over the serious cost of transit to the seaboard. Our three great staple industries, then, bid fair to be permanent.

But there are other industries which are slowly taking root amongst us, and which only want a little fostering care to develop into something greater and more profitable. Amongst these I may mention the preserving of meat, which has become a very important trade. Its progress, however, is dependent on the price of sheep. When they fetch a good price in the open market, it does not pay to preserve them. So far as the sheep-farmer is concerned, one of the uses of preserving is to keep the price of sheep from falling below a certain price. In this way the price can always be kept up to a certain remunerative figure. Of course this is better for the producer than for the consumer, and of late complaints have been made that the price of butcher's meat is altogether too high. The squatters started a meat-preserving company for themselves, with a view of obtaining what they regarded as a fair value for their sheep; but they made a sad mess of it as a commercial speculation, and the business is now in private hands. A few years ago beef and mutton were very cheap. Hind quarters of mutton could be bought for 2*d.* to 2½*d.* per lb., and fore quarters at 1½*d.* These prices are quite doubled now. Of course compared with London prices meat is still cheap enough, and people here eat a great deal, most persons having it twice or three times a day. At one time, when, owing to long continued drought, feed was scarce, thousands of sheep were boiled down simply for the tallow, the meat being buried or turned into manure. I believe this is sometimes done now, but not to any great extent.

The manufacture of leather has also become a very important industry. Skins and hides are plentiful, and tanneries on



HERD OF MIXED CATTLE.

a very extensive scale exist in and around Adelaide. With the increase of this business has also come the establishment of boot and shoe manufactories, employing large numbers of persons. In these all the latest improvements in use in England have been adopted, and an article is turned out which is in no way inferior to what used to be imported. Though the price of labour is much higher here than at home, colonial-made boots and shoes equal in quality to those made in England can be sold quite as cheap as the imported article. The manufacture of slop goods has also become an important industry of late years, employing great numbers of young women, and as a necessary consequence limiting the supply of good domestic servants. Imported slops are at as great a discount now as imported boots. No attempt has been made to establish a system of protection here. The farthest we have gone is to have an *ad valorem* duty of 5 per cent. and in a few cases 10 per cent. on imported goods, and to allow what may be regarded as the raw material used in our manufactures to come in free of duty. This, however, is not carried out fully.

We have also commenced the manufacture of woollen fabrics on a limited scale, a woollen mill having been established at a little German village called Lobethal, about twenty miles from Adelaide. Tweeds, flannels, and blankets have been made; and although they lack the finish of imported goods, they are substantial fabrics for ordinary wear. By the introduction of new machinery and higher skill, there will be an improvement in the quality of the manufactures. Seeing we grow the wool in abundance, there is no reason why this industry should not become a flourishing one in the course of a few years.

The manufacture of wine may now be regarded as an established industry, although it has not been so pecuniarily successful as it was once expected to be. But this has arisen from want of skill in making it, and in managing it in the cellar. Thousands of acres of vines have been planted, and hundreds of acres have again been pulled up. When vine culture first began in the Colony, there was, as a rule, no care exercised as to the selection of the proper kinds for wine-

making, Everybody knew that wine was made from grapes, and one kind of grape was considered to be about as good as another. In the same vineyard there would be a dozen different sorts of vines, and the grapes were all pressed together and made into wine. Of course wine so made, though probably wholesome enough, was wanting in character. This is altered now. Our *vignerons* have learnt that there is a difference in the quality of grapes, and that they should be kept distinct in the manufacture of good wine. Then they have learnt by experience, observation, and reading, the best methods of making and cellaring the wine; and we have vineyards in the Colony which produce as good and wholesome a wine as any man could desire to drink. After years of labour and much bitter disappointment, we are now getting a good market for our native wines in England. There is one thing in their favour—they are the juice of the grape, without adulteration, and in most cases without being brandied. The taste for pure wine needs to be formed and cultivated in England, and when that is done there will undoubtedly be a great demand for it. Much mischief was done to the trade at first by sending home ill-made, immature, and unsound samples, which caused a prejudice, if not a disgust, against them. Our *vignerons* have learnt wisdom since then, and it may be safely said that no wines go home now which are not pure, clean, and wholesome.

For the encouragement of special industries, we owe a great deal to a useful Society which has grown up during the last two or three years, called the Chamber of Manufactures. It consists of gentlemen warmly interested in the cultivation of native industries, who have devoted a large amount of time and trouble to the work. They have had useful papers read and printed, and have kept persistently before the public mind questions which but for them would have been neglected. The growth of mulberry trees for sericulture, of olives for the manufacture of olive oil, and several other smaller and unpretending industries, have been carefully fostered and encouraged by the Chamber.

There can be no doubt that the future of the Colony will greatly depend on the establishing and carrying on of such



Group of Cattle, Angaston.

manufactures as are suitable to a young community, and as we are able to undertake. We have a young generation growing up amongst us, for whom profitable employment must be found. Neither pastoral, agricultural, nor mining pursuits will absorb them all; but manufactures will. Nothing more fatal can happen to a community than for its young men to be driven away to other countries in search of employment which their own country does not afford them. No country that has been purely pastoral or agricultural has ever made progress; there must be, in order to secure success, combined with these pursuits a moderate amount of manufacturing activity. We are coming to this state of things—somewhat slowly, it is true—but we *are* coming, and when we reach it, we shall make another long step towards future permanent prosperity and success. There are many industries inviting capital and labour for their development, and in due time both will be provided. We have in the Colony all that is requisite to make us great; and we only want an increase of labour and capital for our rapid progress. The labour we are importing, though not so rapidly as to meet the immediate pressing claims. Our present Government, however, fully realize the importance of this question, and have determined to spend large sums of money to increase the man-power of the Colony; the capital we are creating year by year.

CHAPTER XXI.

IMMIGRATION.

Necessity for Importing Labour — Efforts of Colony in this Direction — Temporary Cessation of Immigration — Wages High — Good Colony for Working Men — Nationalities — Provisions of Emigration Act — Voyage and Outfit — Hints to Immigrants on Arrival.

ALL new Colonies are as a matter of course dependent for their prosperity on a plentiful supply of labour. However fruitful the land and rich in natural resources, it is nothing without labour. Its treasures will be hidden, its wealth remain undeveloped, until the toil of man brings them to light and translates the possible into the actual. As we have seen, the Wakefield system of colonizing was to combine capital and labour, the capitalist purchasing the land and the money paid for it being devoted to the introduction of men to work it. For many years the Government of South Australia carried on a large system of immigration in a somewhat improvident way. Many persons who were brought out here at a cost of from £15 to £16 per head made Adelaide simply a port of call, and as soon as opportunity offered passed on to the other Colonies, especially to Victoria, where the discovery of gold created a great demand for all sorts of labour.

So strongly was it felt that we were spending our money to provide immigrants for Victoria that for some years no provision was made for the introduction of labour at the public expense. During that time the Colony passed through a period of trial. Unfavourable seasons, extending over a few years, retarded our progress to some extent, and the demand for labour was less than it had ever been. This period of

depression, however, was only temporary, and very soon the demand for labour very much exceeded the supply. It was then felt that a great Colony like South Australia, with untold wealth awaiting development, could never prosper as it ought by the mere increase to its population from the excess of births over deaths. Even they who had been most opposed to immigration at the public expense felt that it would never do to go on without immigration any longer. The Legislature was compelled by outside pressure to pass an Act for its resumption, which Act is now in force. Something considerable has been done during the few years the Act has been in existence; but up to the present time the Government have proceeded very cautiously in introducing labour. It is now proposed to advance more rapidly, and during the present year the Government have £120,000 at their command for carrying on immigration on a more extended scale. A very large supply of labour is required to carry out the great public works which are now in progress, and which are contemplated. Private enterprise is also very much cramped and fettered by the scarcity of man-power.

Wages are as high as in any of the Colonies, and generally are at the least 50 per cent. higher than they are in England. In the present prosperous state of the Colony, thousands of working men might be introduced and find employment without the slightest danger of reducing the price of labour. A principle which regulates the immigration system is to maintain the proportion of the nationalities—English, Irish, and Scotch—according to the proportion in the United Kingdom, so that there shall not be a preponderance of any one people. The principle is not very steadily adhered to; nor is it necessary. It is found that all classes, as a rule, make good immigrants; and the Irish, who half-starve at home become well-to-do colonists when they get a fair start here. From the beginning the Colony has obtained a considerable number of families from Germany — and they make good colonists. Greater facilities are now being given for the introduction of German immigrants, whose industry and thrift make them desirable colonists. The following explanation of

the provisions of the Immigration Act I transcribe from my "Handbook for Emigrants," published a few years ago, which I hope will be found useful to those who may be looking to the Southern Colonies as their future homes, and who wish for information to guide them:—

"*Persons coming out to the Colony at their Own Expense.*—Emigrants who have been approved by the Emigration Agent in England, and paying the whole cost of their passage, or persons paying the passages of such persons, will be entitled to a land order warrant. On their arrival in the Colony, they will receive from the Commissioner of Crown Lands a land order, in exchange for their warrant, of the value of £20 for each adult, and £10 for each child between the ages of one and twelve years. This order will be immediately available in cases where the holder desires to occupy, reside on, and cultivate the Crown land, and will be received as payment, or part payment, of interest on the purchase-money of any land then open for selection. The land order will be available for the *purchase* of any land open for sale, after two years' continuous residence in the Colony. An emigrant and his wife and four children between the ages of one and twelve years, paying their own expenses to the Colony, would be entitled to land orders of the value of £80 in all. If they wished to take up land on credit under the system of deferred payments, their orders would become immediately available as payment of the interest; but in that case they must reside on the land and cultivate it. If they wish to purchase the fee simple of any lands open for purchase, they can use their land orders for this purpose after they have been two years in the Colony.

"*Land Orders Granted to Shippers, Companies, Associations, or Societies.*—The following is in full the clause in the regulations which refer to this provision:—'Any person or persons, company, association, or society desirous of bringing out to South Australia, at his own or their own expense, suitable emigrants from Europe, approved by any emigration agent, for the purposes of settling on the Crown lands thereof, and cultivating the same, or for engaging in any colonial industry, and who shall enter into an agreement with the Commissioner

of Crown Lands and Immigration for the conveyance of such emigrants from Europe to South Australia for the purposes aforesaid, and also enter into a covenant with the said Commissioner that such emigrants shall reside continuously in the said Colony for two years, at the least, from the date of their arrival, shall be entitled to receive, on the arrival of such suitable emigrants in the said Colony (and, if aliens, after naturalization), a land order, in the form contained in the Third Schedule hereto, which land order shall be of the value of £16 sterling for each adult emigrant, and a land order of the value of £8 sterling for each child between the ages of one and twelve years; and every such land order shall be immediately available for the purchase of any waste lands of the Crown which may be offered for sale, or which may be open to selection for cash or on credit, in any part of the said Colony.' This regulation is intended to encourage the employers of labour in any new or established industry to bring out suitable labour to assist them in their enterprise.

"*Assisted Emigration.*—Under the Act, the classes of persons eligible for assisted emigration are—Artisans, agricultural and other labourers, miners, and gardeners, under 50 years of age; single female domestic servants, or widows (without children under 12), not exceeding 35 years of age, the wives and children of married emigrants. Eligible candidates are further described as being 'in the habit of *working* at one of the callings mentioned above, and must be going out with the intention of working at one of the occupations. They must be sober, industrious, of good moral character, in good health, free from all mental and bodily defects, within the ages specified, appear physically to be capable of labour, and have been vaccinated or had the smallpox.'

"*Ineligible Candidates.*—Passages cannot be granted to persons intending to proceed to any other Australian Colony than South Australia, to persons in the habitual receipt of parish relief, to children under twelve without their parents, to husbands without their wives, or wives without their husbands (unless, in the last three instances, the parents, husband, or

wife be in South Australia), to single women who have had illegitimate children, or to persons who have not arranged with their creditors.

"Towards the expenses of the passages of eligible candidates, the following sums must be paid:—Under twelve years of age, £3; twelve years and under forty, £4; forty years and under fifty, £8. This amount may be paid either in London to the Emigration Agent, or in Adelaide, at the office of the Commissioner of Crown Lands and Immigration. The candidate for assisted immigration, or the person who nominates him, must apply to Mr. F. S. Dutton, C.M.G., Agent-General of the Colony, 8, Victoria Chambers, Westminster, from whom all necessary information will be obtained. He must fill up a form which will be supplied by Mr. Dutton, giving the Christian and surname of the persons nominated, or their proposed transferees, the names of all children under twelve, whether they have been nominated in the Colony or not, the ages of each person at last birthday, the day and year when each person was born, whether single or married, and where the husband or wife does not emigrate the reason must be stated; the trade or calling, whether the applicant has been in the Colony before, whether he has any relations in Australia, or in any other Colony, and if in Australia, the other Colonies where they reside. In addition to this, there must be a certificate by a physician or surgeon, testifying that, after examination, the applicants show no signs of heart disease or pulmonary affections, that they are of sound mental and bodily health, that they are entirely free from every disease usually considered infectious or contagious, and that each person appears to be of the age set against his or her name; that none of them are either lunatic, idiotic, deaf, dumb, blind, mutilated, or deformed in person, or otherwise infirm, and that they are capable of earning a livelihood in the Province, at their declared callings. A certificate is also required, from a magistrate, clergyman, or Roman Catholic priest, testifying that the applicants are of good moral character. In the case of any difficulty arising, the intending emigrant should place himself at once in communication with Mr. Dutton, at the address

mentioned above, from whom all necessary information will be obtained.

"*Voyage and Outfit.*—Supposing the candidate and his family accepted, the next matter is to prepare for the voyage, which will occupy about ninety days—during which every extreme of climate will be experienced. Suitable clothing must therefore be provided, at the expense of the emigrant. The outfit will be inspected before sailing by an officer appointed by the agent. The smallest quantity that will be allowed is—For each male over twelve, six shirts, six pairs of stockings, two warm flannel shirts, two pairs of new shoes or boots, two complete suits of strong exterior clothing, four towels, and two pounds of marine soap; and for each female over twelve, six shifts, two flannel petticoats, six pairs of stockings, two pairs of strong boots and shoes, two strong gowns (one of which must be of warm material), four towels, and two pounds of marine soap. Two or three coloured shirts for men, and an extra supply of flannel for women and children are very desirable. The quantity of luggage for each person over twelve must not exceed twenty cubic (or solid) feet, nor half a ton in weight; it must be closely packed in one or more strong boxes, or cases, not exceeding fifteen cubic feet each. Larger packages and extra luggage, if taken at all, must be paid for. Mattresses and feather beds, fire-arms and offensive weapons, wines, spirits, beer, gunpowder, percussion caps, lucifer matches, and any dangerous and noxious articles, cannot be taken by emigrants. I would suggest, however, that in addition to the articles of wearing apparel actually required by the regulations, emigrants would do well to provide themselves with materials for increasing their stock. A few extra yards of flannel, calico, and print, with an extra pair or two of shoes or boots, would be found very useful on the voyage. Where there are children, a number of cheap caps should be provided, as young people are apt to lose their head-coverings overboard. A good ham and a cheese would also be found very useful as a change from the ship's diet; and a few pounds of jam would be acceptable to the children.

"There is no doubt that a three months' voyage in an

emigrant ship, under the most favourable circumstances, will make large demands upon the patience, temper, forbearance, and hopefulness of the emigrants. Inconveniences such as they may not have suffered before will have to be endured; and the best thing emigrants can do is to make up their minds to bear them cheerfully. As a rule, in well-appointed ships, the food is good, and the accommodation as fair as can be expected. Emigrants, too, generally enjoy excellent health. They would do well to provide themselves with useful and interesting books—especially school books for their children: intelligent parents may lay the foundation of a respectable education in the minds of their children during the spare hours of the voyage.

"On their arrival in the Colony, immigrants will probably feel somewhat strange. The consciousness that they are 15,000 miles away from the land of their birth, and from the friends whom they have left behind—the conviction that they are amongst entire strangers, and that they will probably see the old land no more, may sadden them for a moment. But, on the other hand, they will find that in many respects the new country is but little different from the old. The streets, wharves, railways, telegraph lines, gas lamps, water fountains, public buildings, shops, carriages, omnibuses, and cabs, will all remind them of what they have been accustomed to at home. If they are careful, industrious, and respectable, they will soon make friends, and find associations which will bring back the scenes of the past. They will find that our political institutions are most liberal; and very soon after their arrival they will be able to exercise their voting power for Members of Parliament, and to exercise some influence on the public affairs of the Colony. With whatever religious body they sympathise, they will find representatives of that body in almost every part of the Colony: the Anglican Church, with its bishop, priests, and deacons; the Roman Catholic Church, with its handsome edifices and charitable institutions; the Presbyterian Church, with its able and energetic ministers; the Congregationalists and Baptists, who have some of the handsomest churches and most eloquent preachers in the Colony; the Methodists, as full

of fire and zeal as they are in the old country—the sisterhood of denominations who trace their parentage to the old Methodist stock; Unitarians, New Church, and Jews are all found in the Colony; so that the stranger, whatever his religious views may be, is certain to find members of his own body with whom he can sympathize and hold fellowship. Connected with all these religious institutions there are well-attended and well-conducted Sunday Schools, with a noble band of earnest and devoted teachers.

"He will want education for his children, and he will find day schools all over the Colony, in which a fair education may be obtained; or if he aims at something higher than these, there are many excellent private schools, which would do no discredit to the old country. From St. Peter's Collegiate School several young men have gone home and taken good positions in the English Universities; and, as we have intimated elsewhere, our own University will be in full operation before long.

"Does the newly arrived immigrant wish to keep himself acquainted with the literature of the world? He will find means of doing so in the local institutes, which are kept well supplied with the best works of modern times. Does he wish to know what is taking place in the Colony which he has made his new home? He will find it in the morning, evening, and weekly newspapers published in the city, and in the journals published in the country.

"If he feels an interest in the drama, he will find a pretty little theatre, respectably conducted, and in which, from time to time, actors and actresses of high professional standing are found. If he loves music, he will occasionally get a taste of English and Italian opera ably rendered, while amateur performances of music are frequent enough. If he has a penchant for the turf, for manly sports and pastimes, he will find racing well encouraged, hunting during the season, cricket, football, and boating. If he is a freemason, an oddfellow, a forester, or an ancient druid, he will find lodges, courts, and other trysting-places. If he likes his beer, he will find respectable inns; or if he takes kindly to colonial wine, he will be able to get it

almost as cheap as ale. If he is a teetotaller, rechabite, or good templar, he will find brothers and co-workers all here before him. It is really curious to see how soon and how carefully the people of South Australia have reproduced the institutions of the mother country. In cases of accident or misfortune the hospitals, asylums, and public charities, as in the old country, are easily accessible.

"There are three things to be carefully avoided by the newly arrived immigrant—the immoderate use of strong drink, which leads to poverty; gambling, which leads to dishonesty; and idle loafing, which leads to disgrace. The great thing is to get work soon, to eat plenty of good food, which is cheap enough, to cultivate habits of industry and economy, and so to encourage the pleasant conviction that he is getting on, and surely working his way to independence. That conviction will be one of the greatest luxuries a working man can enjoy."



CLUB HOUSE.

CHAPTER XXII.

RELIGIOUS.

No State Church — Strong Religious Feeling — Success of the Churches — Sects and Parties — Places of Worship.

I HAVE already said that the foundations of the Colony were laid on the principle of the entire separateness between State and Church. It was determined that no form of religion should be distinctively recognized by the State, but that all churches should be on the same footing of equality, none being specially honoured or subsidized, and none being placed under any civil disabilities. This did not arise from any feeling of indifference to religion on the part of the founders of the Colony, but from a conviction that the sphere of civil government and the sphere of church organization and action were entirely separate. The vigorous attempts made by the earliest settlers to supply themselves with church ordinances according to which they might worship the Creator as they had been accustomed to do, showed that a very deep interest in religion was compatible with a very strong feeling against State religion. I am not called upon here to say whether the determination was right or wrong. I have to deal with the matter historically.

One or two attempts were made years ago to obtain some recognition from the State of one or two churches, but public feeling was so strongly against it that the attempt has never been repeated. The question is now settled, and the Church and the State have agreed to pursue their own separate courses, without jostling each other, or intruding upon each

other's domains. Writing as an historian, I am bound to say that the result has been satisfactory. Voluntary effort and private benevolence have been sufficient to provide the whole community with churches and the ordinances of religion. The amount of money and religious zeal expended in this way would be remarkable in any community, but is especially so in a small and not very wealthy community like ours.

The Church of England in Australia, or the Episcopal Church, is numerically at the head of all the denominations, and in South Australia as elsewhere is a very important and influential body. The head of the Church is the Right Rev. Augustus Short, D.D., Bishop of South Australia, who was appointed by Letters Patent as the first Bishop in 1847. Bishop Short is a fine, hale old gentleman of 70, with a robust physique and a vigorous mind. He is the *beau idéal* of a missionary Bishop, working as hard as the most hard-worked curate in his Church. He is indeed "in labours more abundant." His career in the Colony has been a very honourable and successful one. He is a Churchman to the backbone, and has defended his Church when occasion called for it with great vigour; but he is respected by all sections of the religious community for his ability, consistency, and kindness of spirit. He is, too, a thorough man of business, with high administrative powers.

The present respectable position occupied by the Episcopal Church in the Colony is very much owing to his intelligence, unwearying zeal, and true Christian character. His life has been an eminently useful one; and now, full of years and honour, he has the satisfaction of seeing the Church, of which he is the official head, in a high state of efficiency and prosperity. The bishop has under him in his diocese the Dean of Adelaide, two archdeacons, two canons, something like fifty clergymen in holy orders, and a large staff of licensed lay readers, who conduct religious services in various parts of the Colony. The property of his Church is valuable, and has been so wisely invested as to produce an annually increasing revenue for Church purposes.

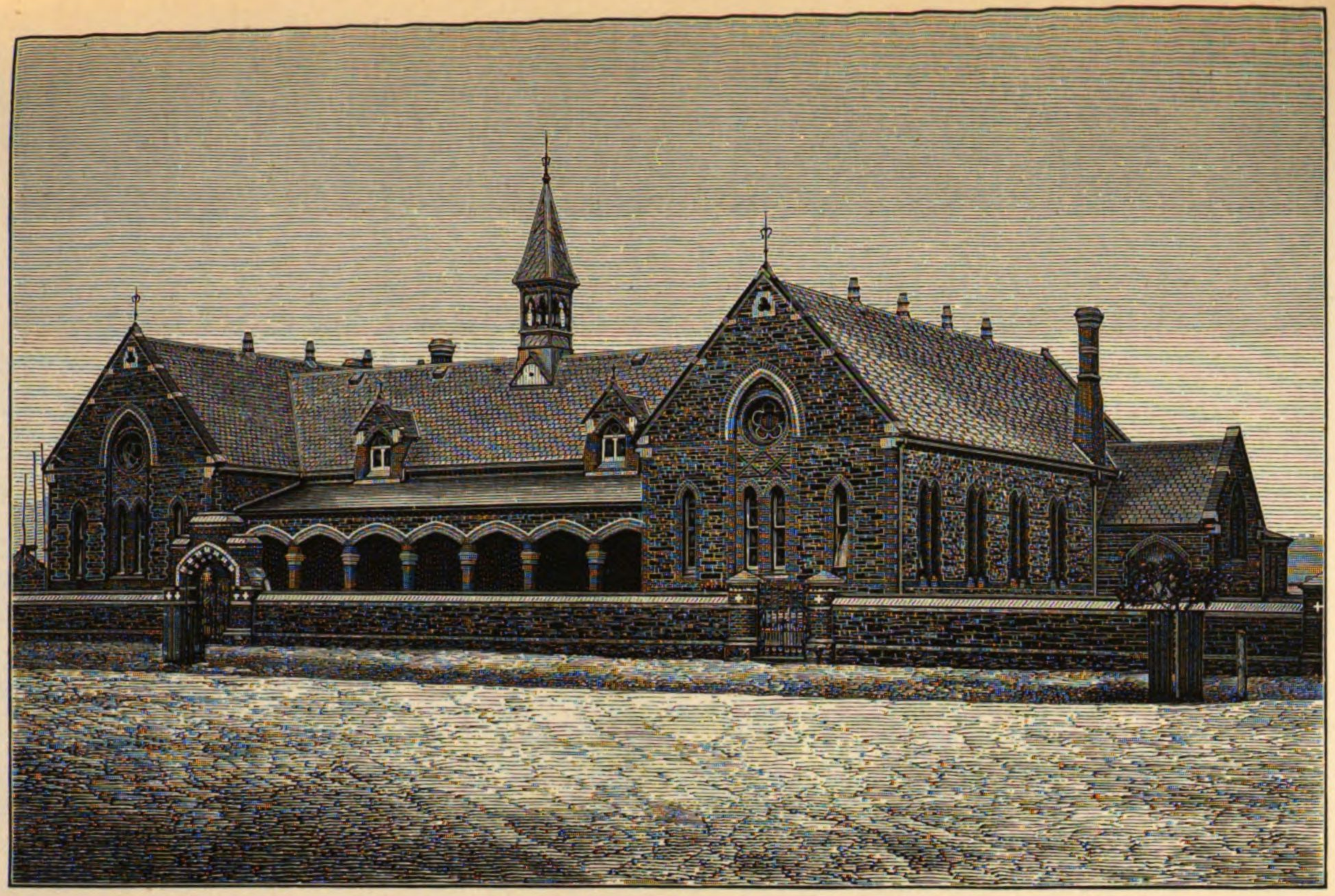
The Roman Catholic Church in the Colony is also an

important and a numerous body. The first Bishop was Dr. Murphy, who was respected by the whole Colony and beloved by his own people. He was succeeded by Bishop Geohegan, who, after a few years of service, gave place to Bishop Shiel, a genial, fine-spirited old ecclesiastic, who died in the Colony amidst general expressions of regret. The present Bishop is Dr. Reynolds, a quiet, hard-working clergyman, who served his Church in the Colony for many years as an industrious, toiling priest. His co-religionists are proud of the fact that one of their own priests, whose self-denying labours were so well known to them, was selected by His Holiness the Pope for the highest ecclesiastical honours in the Colony. Bishop Reynolds has a large staff of priests and sisters under him, a considerable portion of them being connected with the Society of Jesus. The Jesuits devote themselves very largely to the work of education, and they have a college in the North for religious and secular students, which is said to be very ably conducted. There is also a convent in Adelaide, under the management of Dominican nuns, which is devoted to the education of young ladies. The ordinary schools are conducted by several sisterhoods, members of which also devote themselves extensively to works of charity.

The Wesleyan Methodists are a large body, and the country districts owe much to them for the religious ordinances which they enjoy. In this work they are ably supported by the Primitive Methodists and Bible Christians, who have erected chapels in and supplied religious teaching to every little village and hamlet in the Province. Their ministers, regular and lay, work hard, and the sparsely populated districts owe much to them. The Wesleyans have a large number of churches and preaching places, a numerous body of preachers and Sunday School teachers, and they constitute one of the most powerful of all the religious bodies. The other two bodies I have mentioned, who have a close resemblance in doctrine and organization to the old Wesleyans, have less influence in society than the old Wesleyans, but in the extent of their self-denying labours they are second to none.

The Congregationalists, Baptists, and Presbyterians, occupy

a different ecclesiastical position, and aim at a more restricted work than the churches I have already referred to. Their work lies principally in the centres of population, where they manage to attract the intelligent, hard-headed, and practical men amongst us. Members of these Churches are foremost in political life, and they come to the front in business and political organizations. They are rich in handsome churches, and strong in social influence. Their ministers are amongst the best educated and the most eloquent preachers in the Colony, and their people amongst the well-to-do colonists. The conduct of the Press of the Colony has been very much in their hands. Possibly the freedom of thought engendered by democratic ecclesiastical institutions has something to do with the position they take in the politics and Press of the Province. Amongst the smaller denominations, the Unitarians, who have one pretty little church in the City, occupy a prominent position for their intelligence and social influence. All these Churches build their places of worship, support their ministers, carry on their Sunday Schools, and engage in many works of benevolence, without receiving one penny from the State. I ought to say also that the Jews, who form a very respectable and influential section of the community, have erected a handsome synagogue in Adelaide, which is presided over by an accomplished minister.



MODEL SCHOOLS.

CHAPTER XXIII.

EDUCATION.

First Education Act passed, 1851 — Its Principles and Organization — Good done by it — Colony outgrown it — Attempts to pass a New Act — Now successful — Higher Education — University — Princely Gifts of Mr. W. W. Hughes and Hon. T. Elder — Council of University — Institutes.

THE system of public education in South Australia has existed for nearly a quarter of a century, the Act constituting it having been passed in 1851. Its original intention was to assist, by Government grants, the people to educate their children, giving them "a good secular instruction, based on the Christian religion, but apart from all theological and controversial differences on discipline and doctrine." The Act has been administered by an Education Board, with paid secretary and inspectors. The Board licenses schoolhouses and teachers, and, within certain restrictions, assists teachers by annual grants which they receive in addition to the school fees. Though over a series of years the system worked moderately well, and under it a considerable proportion of the population have received a fair amount of elementary instruction, it has been felt of late that something better and more adapted to the present state of the Colony was needed. Under the old system the teachers were miserably paid, and the qualifications of many of them far below the growing necessities of the community. Several attempts have been made to pass an improved Bill through Parliament, but until the present time these have not been successful. It has been difficult to settle the principles of a great and comprehensive measure, and until these were settled, no further step could be taken.

This year, however, the Government introduced, and have carried through Parliament, a greatly improved measure, which has received the Governor's assent, and is now the law of the land. The future management of the public education will be in the hands of a Council of Education, with a paid president, secretary, and inspectors, directly responsible to the Minister of Education. Schools will be established wherever there is a certain number of children of a school age, who will pay a moderate fee to the teachers. In addition to the fees, the teachers will be paid, by the Government, through the Council, salaries varying from £100 to £300 per annum. Schoolhouses will be provided, and the necessary education material. Grants of public lands will be set apart every year, and placed under the control of the Council, the rents from which will be devoted to school purposes. Four and a half hours each day will be devoted to secular instruction, previous to which the Bible may be read without note or explanation: practically, the instruction will be secular. All children of school age will be required to be under instruction until a certain standard of attainment, to be fixed by the Council, is reached: so far, the system will be compulsory. Provision is made for the gratuitous instruction of children whose parents can show that they are not able to pay for it; but fees may be enforced in all cases where inability to pay them has not been proved. It will thus be seen that the three great principles of public education which are now so much in vogue are adopted in the Bill, with certain modifications. The education is secular—but not to the exclusion of the Bible; free to those who cannot afford to pay a small fee; and compulsory wherever practicable. Provision is also made for the establishment of model and training schools, of boards of advice, and for the systematic examination of teachers, and their classification according to their attainments and proficiency. The Government propose to borrow for the present erection of schoolhouses, and has voted a large sum for the payment of teachers' stipends out of the general revenue. No one claims anything like perfection for the measure, but it is the best that could be carried under the present circum-

stances of the Colony, and it is a very great improvement on the system which it is intended to supplant.

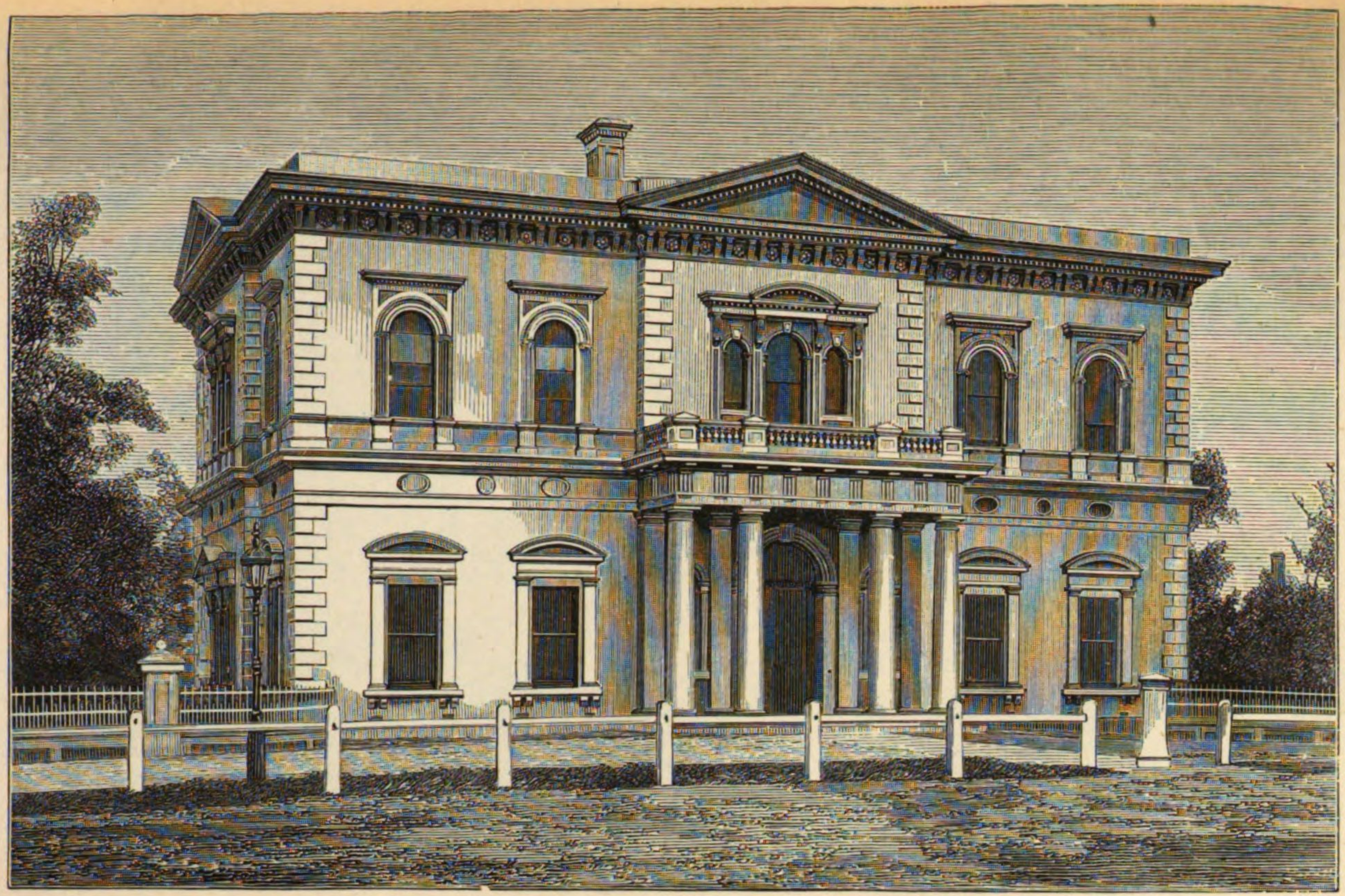
For higher education we have some admirable educational institutions, at the head of which stands St. Peter's Collegiate School, belonging to the Church of England, and under the very efficient management of the Rev. Canon Farr, M.A. This school was established in 1848, mainly by the exertions of the Bishop, and it was incorporated the following year. It occupies very handsome and commodious premises in a pleasant suburb about a mile from Adelaide. The course of education is liberal, and some valuable exhibitions and scholarships are connected with it. Several of the youths trained in it have taken good positions at the English Universities. It is pursuing a career of usefulness which will increase every year.

Prince Alfred College belongs to the Wesleyan Methodists, and is a more recent institution. The fine pile of buildings, a portion of which, however, is only completed, occupies a pleasant site a little way out of town; and the first stone was laid in 1867 by H.R.H. the Duke of Edinburgh, on his first visit to the Colony. The branches of a liberal education are taught, under the head mastership of Mr. J. A. Hartley, B.A., who vacates his position shortly in order to enter upon the responsible duties of President of the Council of Education; and the institution has been well supported from the beginning.

In addition to these two public institutions, there are several high-class private schools in the Colony, several of which have been eminently successful in turning out fairly educated young men, many of whom are now occupying honourable positions in the Colony.

Our most recent success in education has been the establishment of the Adelaide University, which is now in process of formation. We owe this institution to the generosity and public spirit of a wealthy colonist, Mr. W. W. Hughes, who has been very successful in connection with copper mining on Yorke's Peninsula. A few gentlemen anxious to found a

college, primarily for the education of candidates for the Christian ministry, waited upon Mr. Hughes to ask for a contribution in aid of the movement. The intimation they received of Mr. Hughes's proposed benevolence pointed to a sum so much beyond their largest expectations that for a moment they were somewhat bewildered by the munificence of the proposed gift. Mr. Hughes offered £20,000; and the projectors of the Union College, principally clergymen of various denominations, very much to their credit, suggested the establishment of a University rather than a college. Mr. Hughes consented, and endowed two chairs of £600 per annum each, simply reserving the right of nominating the two first professors. The movement grew, an Act was passed by Parliament for the incorporation of the University, and a grant of 50,000 acres of land was made towards its support, with a building site of five acres on North-terrace; and an annual grant of 5 per cent. from the public funds on all sums contributed for the University. The only conditions required were that no religious tests should be required of either students or professors, and that the first council should be nominated by the Governor as soon as the Bill was carried through Parliament. The Hon. Thomas Elder, a wealthy merchant and sheep-farmer, spontaneously gave a donation similar to that of Mr. Hughes, £20,000, without any conditions or restrictions whatever. These acts of princely generosity are creditable to gentlemen who have made their wealth in the Colony, and will no doubt be followed by others on whose industry Providence has smiled. The whole control of the University is vested in a council of twenty members. The Chief Justice, Sir Richard Davies Hanson, Knight, has been elected Chancellor; and the Bishop of Adelaide, Dr. Short, Vice-Chancellor. These appointments gave general satisfaction. The two "Hughes Professors," the Rev. John Davidson and the Rev. Henry Read, M.A., occupy the chairs of English Language and Literature and Mental and Moral Philosophy, and Classics and Comparative Philology. The Council have secured in England a Professor of Mathematics, Mr. Horace Lamb, and



INSTITUTE.



WATERFALL, MORIALTA, ADELAIDE.

another of Natural Sciences, Mr. Tate, who are expected to arrive in the Colony early in 1876. The University is at present in its infancy, but it will soon be in full working order.

My short sketch of our educational means and appliances would be incomplete without some reference to the South Australian Institute and Museum. It was incorporated by Act of Parliament in 1855, to promote the general study of the arts, sciences, literature, and philosophy. It possesses a valuable library, and a good museum. A part of the library is circulating, and a part for reference and perusal in the reading-room. The Museum is under the competent management of Mr. Waterhouse, whose interesting chapter on the Fauna and Minerology of South Australia will be found in this volume. Both the Institute and Museum are sadly crippled for want of space, but this will be remedied shortly, as plans for a new building have been selected by the Government. The Institute is supported by an annual vote from the public funds, and by the personal subscriptions of members. The Society of Arts and the Philosophical Society are affiliated to the Institute, and have a share in its management.

Country Institutes, which are widely spread over the Colony, are branches of the principal Institute in the city, and are supplied with books and periodicals from town. The Parliament have always contributed pound for pound raised by voluntary subscriptions towards the erection of the country Institutes, and to assist towards the annual expenses.

Looking at all these facts, I think it will be admitted that for so young a Colony, with so limited a population as South Australia, it is to our credit that we have not forgotten the necessity and importance of having trained up amongst us an intelligent and well-taught people. The results have been satisfactory on the whole. The majority of our young people are fairly educated and fitted for the positions which they occupy, or to which they aspire. Several of our Members of Parliament were born and have been educated in the Colony, and they shape well in the performance of their legislative duties.

CHAPTER XXIV.

CONCLUSION.

Colonization an Imperial Question — Federation — No Degeneracy in Population in Australia — Advantages of South Australia — Wealthy Colonists — Comfort of Colonists — No Poverty — Colony needs to be better known — A great Future before it.

THERE is no doubt that colonization will continue to be a question of the greatest interest to the British people. Our old island home in the North Sea is getting over-crowded, and an outlet is wanted for its surplus population. This has been felt for years past, and some millions of the Queen's subjects have been forced out of the land of their fathers to find or make a "Greater Britain" in the lands of the west and the south, and to reproduce there—shall I say with amendments and improvements?—the institutions under which they were nurtured. Most of these have settled in the United States of America, and have been lost to the nation as British subjects. Great numbers, however, have settled in Canada, where the separate Colonies now form one great confederated people, with a history before them the magnificence of which it is impossible to forecast. These Colonies of Australia are of more recent origin; but their progress has been great and remarkable. We must bear in mind that we are 15,000 miles away from the mother country, and that under ordinary circumstances about three months must be spent on the ocean by those who immigrate before they can reach the new country of their adoption. This fact, of course, places the Colonies of Australia at a disadvantage when compared with Canada or the United States. Notwithstanding this, however, we have made large

progress during the last forty or fifty years. The foundation of future greatness has been well laid; and when we become a confederated nation, which must happen within a very few years, we shall reproduce in the Southern Pacific, with such modifications as are due to soil and climate, another Britain, which will play its part in the future history of the world.

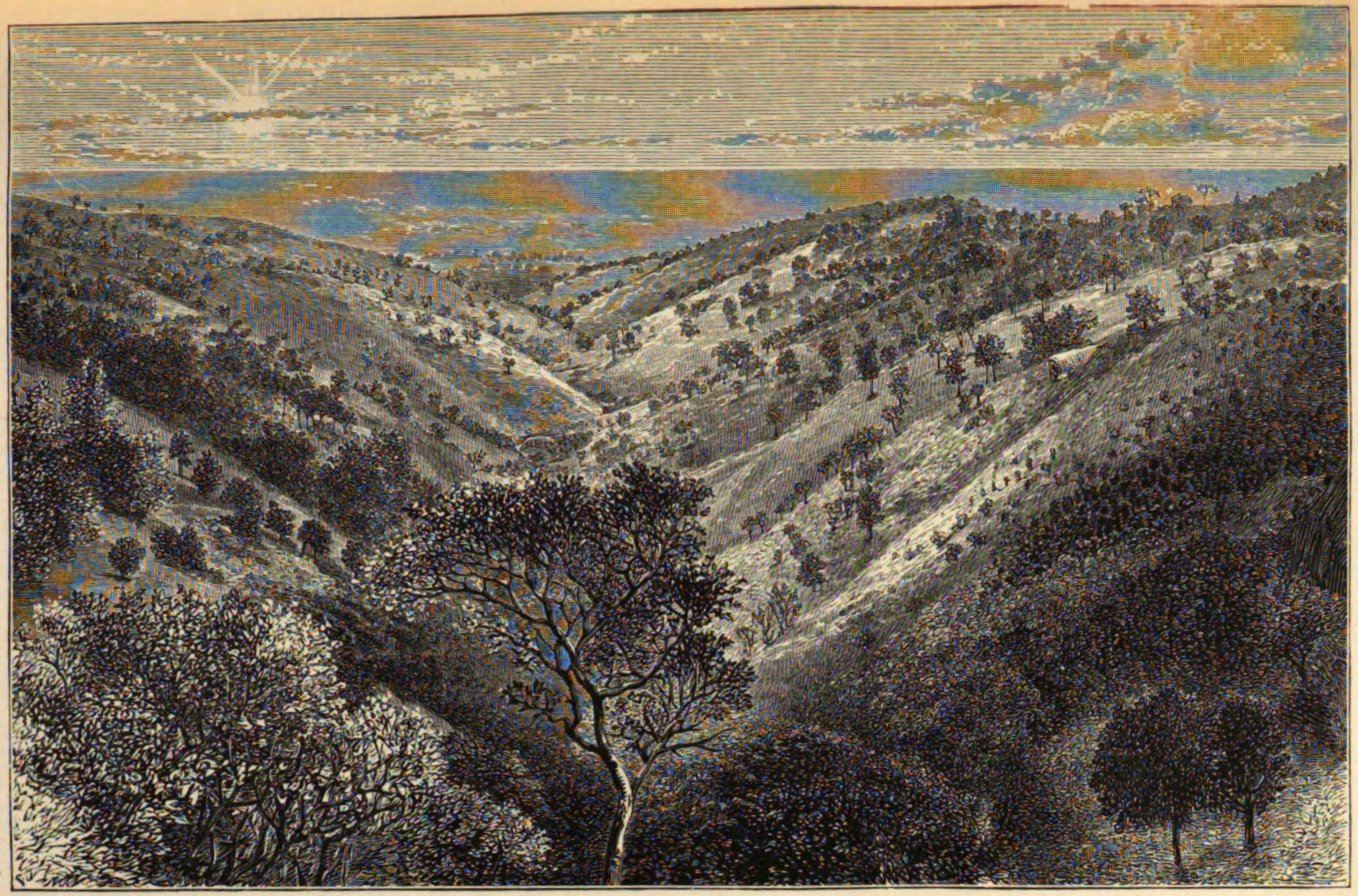
So far we see no signs of degeneracy in the race. There are differences slowly going on, and probably in the course of a few years the physical peculiarities of Australians will be as distinctively marked and separate from the native-born Britons as the American type has become in 200 years. There may be alteration without deterioration; and I believe the intellectual and moral life of the people here will suffer no decline. We shall differ in accidentals from the old stock, as the man differs from the child—but the real manhood of the Anglo-Saxon race will remain, in spite of all accidental changes; and those qualities which have made our fathers great will not be lost by their far-off children. So I believe it will be with our political institutions and our social life. We shall modify these without destroying their higher qualities. In some respects the new generation of the south may improve upon the old type, while we hold fast by the underlying principles which have made it famous.

Amongst the Colonies which are destined to greatness, I believe South Australia is in the foremost rank. She possesses most of the elements of expansion and progress. I know no Colony which presents greater attractions or gives a higher promise of success to careful, industrious, hopeful settlers than South Australia does. It has a magnificent and salubrious climate, a fruitful soil, an abundance of mineral wealth, millions of acres of unoccupied land inviting the industry of man. It has a free Government, liberal institutions, the smallest amount of taxation, and the necessaries of life are obtainable at the cheapest rate. Its land laws will enable any industrious man to get on the soil, and in the course of a few years to make a handsome estate his own with only hard work and moderate self-denial. No man in South Australia who has health, and is willing to work, need be poor—as poverty is

understood and felt in the older countries of Europe. There are hundreds who came here with nothing who are now wealthy men, whose families are growing up around them in positions of respectability and honour. Some have returned to the old country to educate their children, and to show them something of the refinements which belong to the more settled states of society; but most of them, after a few years' absence, return to the land where they have acquired their wealth, made their homes, and formed those associations which are most abiding. With a wise forethought, the Imperial Government have from time to time recommended some of the most useful of the Colonists to Her Majesty for special distinction, as those who have served their country well; and, as a rule, honours thus conferred have been worthily worn. Some names have already taken root amongst us, brought by worthy settlers in the beginning of the Colony's history, which will go down with honour to the coming generation as the names of the Pilgrim Fathers are now honoured in New England.

While large fortunes have been acquired by a special class, the savings of the poorer have been considerable. More than three-quarters of a million sterling is deposited in the Savings Bank, the interest on which varies from 4 per cent. to 5 per cent. Most of this belongs to the humbler classes, and represents a portion of their savings. It is, however, only a small portion. Many of the artisan class have, through the aid of building societies, erected for themselves comfortable cottages, surrounded by pretty, fruitful gardens, and they are thus able to live rent-free—a matter of no small moment in a country where house rent is high. For real substantial comfort there are few countries more highly favoured than South Australia. The large sums of money which have been raised voluntarily for the building of churches and the support of religious and educational institutions, show a well-to-do people, who, after supplying their own wants, can spare considerable sums for such objects.

I have been many years in the Colony, and I can honestly say I have never seen anything approaching to the terrible poverty and consequent suffering which I remember existing



WATERFALL GULLY, NEAR ADELAIDE.

in such towns as Liverpool, Birmingham, Newcastle-on-Tyne, and London. When I have seen the comfort in which the poorest, who can work and are willing to work, live in this Province, the abundance of good food—not to mention the luxuries—which they enjoy, I have wished that we could transport to our shores such of the suffering English poor as are willing to work if they could only obtain remunerative employment.

I honestly believe that if the Colony of South Australia were better known; if the advantages it offers to the working classes and industrious men with some little capital were understood, thousands of families would soon be attracted to its shores. Very much land remains to be possessed and subdued and brought into use. For this, above all things, we want people, and I believe the people will come when they know what we have to offer them. The "Colonial Question" is one for the Empire as well as for the Colonies. As the father lives again in his children and grandchildren, so Great Britain lives again, perhaps a more vigorous and a grander life, in her Colonies. All we ask from home is a word of encouragement now and then, and a spirit of forbearance and a forgiving sympathy if we do occasionally make a mistake or two. To make mistakes belongs to the period of youth, and as we grow older we shall grow wiser. We do not ask for money—we can make plenty of that for ourselves; but we sometimes hunger for a kind word of recognition, and we do ask that our efforts —blundering as they may sometimes prove—to raise up a new England in the south, not unworthy of the old stock from which we came, may be treated with respect. We are even now the best customers England has for her merchandise; we supply her with a great deal that she needs, and without which she would be less prosperous than she is. We take her as our model, and try to be what she has been in her grandest days, and we say, "Do not look coldly upon us; for one day you will be as proud of us as a father is proud of his brave and stalwart sons."

SUPPLEMENTARY CHAPTER.

THE NORTHERN TERRITORY.

Acquisition of Territory by South Australia — First Attempts at Settlement — Failure of first Party — Recall of Government Resident — Subsequent History — Survey of Land by Mr. G. W. Goyder — Country rich and auriferous — Gold Mining — Tropical Industries — Wreck of the *Gothenburg* — Papers on Territory by Residents — General Sketch by Mr. J. G. Knight; Settlement, by Mr. G. R. McMinn; Climate and Overland Telegraph, by Mr. J. A. G. Little; the Goldfields, by Mr. J. A. Plunkett; Indigenous Vegetation, &c., by Mr. J. G. Knight; Conchology, by Mr. W. T. Bednall.

THE Northern Territory, or Alexandra Land, comprises the immense tract of country which was made over to South Australia as one of the results of the explorations of Mr. J. McDouall Stuart. It contains an area of 531,402 square miles, or 340,097,280 acres. It is bounded on the north by the Indian Ocean; on the south by the 26th parallel of south latitude; on the east by the 138th meridian of east longitude; and on the west by the 129th meridian of east longitude.

When Stuart returned from his last journey across the Continent, after having successfully shown the practicability of the overland route, our Government entered into negotiations with the Imperial Government for the cession of the newly discovered territory to South Australia. Whether it was wise for the Colony, having ample territory already, and possessing but a limited population, to undertake the responsibility of settling a new and immense district, may admit of grave doubt. The matter, however, was taken up with considerable enthusiasm at the time. It was resolved to survey and offer for sale a considerable quantity of land on the north-western

portion of the Continent. The land sales took place in Adelaide, in March, 1864, before the surveys had commenced. The land was divided into country sections and town blocks—the proprietor of a section being entitled to a town block. The land was sold in order that the funds might be devoted to the cost of surveying and settling the country in the first instance. A considerable number of sections were purchased by English speculators, who risked their money on the chance of its becoming a profitable investment in the future. Priority in choice of selections amongst the purchasers was to be determined by lot; and the Government entered into an arrangement with the selectors to have the land surveyed and ready for selection within five years of the time of the sale. The land was readily taken up, and preparations were immediately made for dispatching a party to North Australia to carry on the work of survey, and to protect life and property there.

The most important question the Government had to determine was the choice of a Government Resident, who should be at the head of the party, and under whom the surveys were to be carried out, and by whom the first little community of settlers were to be governed. The gentleman selected for this responsible position, Lieut.-Colonel Boyle Travers Finniss, was believed to possess high qualifications for the office. He was an old colonist, who had large experience in public life. He had been Treasurer of the colony, and at one time Acting-Governor. He was an officer of high rank in the volunteer force, and he was a surveyor by profession. The Government who appointed him were highly commended for their judicious selection; and the general impression was that a better choice could not have been made. Mr. Finniss set to work immediately to prepare for the departure of the first expedition, in which he was liberally assisted by the Government. The officers of the party were:—B. T. Finniss, Government Resident; J. F. Manton, Engineer and Surveyor; F. E. Goldsmith, Surgeon and Protector of the Aborigines; Ebenezer Ward, Clerk in charge and Accountant; Stephen King, Storekeeper; John Davis, Assistant Storekeeper and Postmaster; W. Pearson, J. Wadham, and A. R. Hamilton, Surveyors; R. Watson and

J. W. O. Bennett, draughtsmen. In addition to these there was a strong party of chainmen, labourers, and able-bodied seamen. It is worth noticing that Mr. Ward, who went out as Clerk in charge, is at the present time the Minister in the Government who, from his position, has official charge of the Northern Territory.

The Government chartered a good vessel—the *Henry Ellis*—for the first expedition, and fitted her up in such a way as in all respects to promote the comfort of the men during the voyage, and amply supplied her with stores, instruments, and weapons for the protection of the party on their arrival. In the instructions given to the Government Resident, Adam Bay was suggested as a likely place for the first town; but he was left with full discretion to select another site if, after examination, he found that unsuitable. Mr. Finniss was also instructed to establish and cultivate friendly and confidential relations with his party, and especially to see that no injustice was done to the natives of the country.

Before the expedition sailed a luncheon was given to the party at Port Adelaide, presided over by the Chief Secretary, Mr. (now Sir Henry) Ayers, and in the presence of Governor Sir Dominic Daly. It was an exceedingly interesting gathering, and high hopes were cherished of the success of this bold attempt to establish a new settlement in Northern Australia. Mr. Finniss made an admirable speech, in the course of which he expressed the fullest confidence in his officers. A few days afterwards the expedition sailed, carrying with it the best wishes of the whole people of the Colony. In June, 1864, the *Henry Ellis* cast anchor in Adam Bay, and the party landed. Unfortunately, before the voyage was over, misunderstandings had grown up between the head of the party and some of his officers, and these misunderstandings became more serious after the party had taken possession of the Territory. The first river camp was fixed on July 1, and the men celebrated what they regarded as the actual commencement of their work by broaching a barrel of beer which some one of the party had brought to the tent.

It is not my business here to refer at any length to the

unfortunate disasters which attended the first attempt to settle the Northern Territory, or to pronounce any judgment as to the causes of these disasters. I have to describe results rather than causes. The expedition resulted in a decided failure. Quarrels between the Government Resident and his officers led to a state of utter disorganization. The head of the party seemed to lose all control over it. Mr. Finniss selected Escape Cliffs as the site of the town against the protests and remonstrances of some of his officers and gentlemen who represented the selectors. But little progress was made with the survey; the party became dissatisfied, insubordinate, and idle. Quarrels took place with the natives, who stole the insufficiently protected stores, and who were punished without discrimination. The reports which came from the Territory to Adelaide were of the most disheartening character. The Government Resident complained of his officers, and his officers complained of him. Meanwhile precious time was being wasted, and but little was being done towards the survey of the country.

Some of the settlers purchased a small boat—the *Forlorn Hope*—with which to leave the settlement. In this boat they sailed 1600 miles to Champion Bay, and proceeded thence to Adelaide, where they brought before the Government what they averred to be the actual state of things at Adam Bay. The Colony was indignant at what they heard. Mr. Finniss was called upon for explanations, which, being deemed unsatisfactory, he was finally recalled to Adelaide, and Mr. Manton was left in command. A Court of Inquiry was appointed by the Government to investigate certain charges which had been laid against Mr. Finniss, and the evidence was fully reported. The Court found that the Government Resident was wanting in tact in the management of his men, that he had not shown skill in organizing their labour, and that he had not taken sufficient care to protect the stores upon which the party were dependent. A majority of the Commission also blamed Mr. Finniss for selecting such an unsuitable site as Escape Cliffs for the township. They also found that he had not shown sufficient tact and care in his dealings with the natives, and

that he had unnecessarily left the Territory without leave. The report, however, stated that the party entrusted to Mr. Finniss included many persons unfitted for the work for which they were engaged, and that some of the witnesses called manifested so much personal animosity towards Mr. Finniss as to render their testimony of comparatively little value. The result of the inquiry was the removal of the Government Resident from his position.

Under the administration of Mr. Manton there was not much improvement. The impression became stronger and more pronounced that Adam Bay was not the proper place for the settlement; and the question was gravely discussed whether it would not be better to pay back to the selectors their money with interest, withdraw the expedition, and abandon the settlement—thus confessing that we had failed in our first attempt at colonizing. Looking back now, many persons believe that this would have been the best course to adopt; but neither our pride nor our self-interest would allow us to come to this determination.

The next step taken by the Government was to find, if possible, a better site for a new settlement. Captain Cadell was dispatched to the Gulf of Carpentaria to see what advantages offered there. With his usual enthusiasm he undertook the congenial work, and on his return he presented a highly poetical report of his explorations and investigations, which was received with ridicule, almost amounting to contempt.

The state of things was now becoming serious. The five years within which the Government had pledged themselves to have the surveys completed, and the land open for selection, were rapidly passing away, and nothing practical had been done. Escape Cliffs was abandoned, and the party recalled, and the Government were at their wits' end to know what was to be done. The London selectors banded themselves together, and somewhat insolently demanded back their money with interest. This demand was resisted by the Government, who still hoped to finish the survey. They passed a Bill through the Parliament to give to the original selectors a greatly increased area over that to which they were entitled, in

consideration of the delay which had taken place in the surveys; but this offer was limited to those who undertook to withdraw the threatened legal action against the Government. Many of the selectors accepted this offer, but the bulk of those in London refused it, and persisted in their demand for a return of their money.

At this time Mr. G. W. Goyder, the energetic Surveyor-General of the Province, was requested by the Government to go personally to the Northern Territory with a competent and thoroughly equipped party, to select a site, and to complete the survey without delay. Mr. Goyder undertook this responsible work, and soon got a fine party together. The Government justly had confidence in his judgment and energy, and left the work very much to his discretion. He selected Port Darwin for the site, and laid the foundation of Palmerston as the chief town. As soon as he arrived, without allowing one day for idleness, he set his band of surveyors to work in various parties, he himself moving amongst them from place to place, directing, encouraging, and animating them all by his personal presence and labours. There was no dissatisfaction, grumbling, or insurbordination; and, under the controlling spirit of one energetic man, the great work, which five years had failed to accomplish, was completed in a few months. Had Mr. Goyder been dispatched in the first instance, the Colony would have been saved the shameful disasters which attended the first attempts to settle the Northern Territory, and the large sums of money which they cost, and which were extravagantly wasted in the most reckless way.

In another part of this work I have described the construction of the Overland Telegraph, which has its northern terminus at Port Darwin. In the course of its construction ample evidence was given of the auriferous nature of much of the Territory, and when the surveys were completed, a considerable number of settlers went there principally with a view to gold digging. A form of government was provided for the settlement, which still exists, and which has been modified to some extent especially in the judicial and ad-

ministrative departments. The papers which follow—and to which these remarks are intended as an introduction—which have been written by competent gentlemen in the Territory, and edited by Mr. J. G. Knight, describe better than I could do the present condition and prospects of the Territory. They may be accepted as perfectly trustworthy, as they are the result of personal observation and experience.

That the Northern Territory, notwithstanding all its disastrous and humiliating history, is a rich country, and destined to become a great settlement, every one who knows it is convinced. It has been grossly mismanaged, and therefore it has so far been a huge failure. Its resources, however, only need to be prudently and energetically developed to bring wealth to the settlers. The Parliament has made Palmerston a free port, with a view to encourage trade with other countries. In this respect it possesses greater advantages than Singapore. It is almost certain to become the *entrepot* from which Australian horses will be supplied to the Indian Government as remounts for the army. Mr. R. D. Ross pointed out the advantages of Port Darwin for such a purpose years ago, and went, accredited from Governor Fergusson to the Governor-General of India, in order to point out the advantages of the place as a remount station for collecting and dispatching Australian horses, and the matter has not been lost sight of. The Northern Territory has cost this Colony a great deal of money, but there can be no doubt that every penny will one day be paid back with interest. The adoption of a wise and energetic policy for the encouragement of semi-tropical products and for developing the mines will give it a start; and a fair start is all that it really needs to ensure ultimate success.

Before allowing the residents in the Northern Territory to speak for themselves in the papers which follow, there is one more point to which I must refer. I have mentioned above that a new scheme of law administration is to be adopted in North Australia. Until now the system in existence in South Australia had necessarily to be applied in the North. Prisoners

charged with serious offences, which could not be dealt with in the Local Court at Palmerston, had to be brought down to Adelaide, with all the expense of conveying witnesses, and all the delays consequent on the distance of the Territory from Adelaide. This year the Government determined to hold a Circuit Court at Palmerston, presided over by one of the Judges of the Supreme Court of the Province. Mr. Justice Wearing, the Third Judge, was therefore dispatched to hold a Court, and was attended by the necessary officers. He and his party reached Port Darwin in safety; the Court was held, and they embarked in the steamer *Gothenburg* for the return voyage. Unfortunately, however, the steamer ran on a reef lying off the coast of Queensland, and in the course of a few hours became a total wreck—the greater portion of her passengers and a crew thus meeting with an untimely death. Over a hundred persons—men, women, and little children—were ruthlessly swept from the deck of the ill-fated vessel. A few escaped in boats, but the great majority went down making no sign. Amongst the sufferers were Judge Wearing; his Associate, Mr. Pelham; Mr. Whitby, acting Crown Prosecutor; the Honourable T. Reynolds, who for many years had been a leading politician of the Province, and his wife; and the Captain and his chief officers. No calamity that ever befel the Colony produced such a feeling of sorrow or such a kind expression of heartfelt sympathy as this. For a time we were stunned by the news, and walked like those in a dream. But when the first shock passed away, there was an immediate cry for help for the families of those who had gone down in the sea. The Parliament took care of the families of those who died in the service of the Government, and made liberal provision for them; and the generous benevolence of the public took charge of the rest. A sum of between £9000 and £10,000 was at once contributed and judiciously distributed amongst the sufferers; and when this act of justice was done, the Colony breathed more freely.

The law is now so altered that all offences except felonies punishable by death shall be dealt with by a Local Court, at Palmerston, and other cases, of which it is not probable there

will be many for some time to come, will be brought down to Adelaide for trial. With these introductory remarks, I now give the Papers on the Northern Territory, which have been edited by Mr. Knight.

[*The whole of the following Section is edited by Mr. J. G. Knight.*]

GEOGRAPHICAL SITUATION.

The Northern Territory, of which Port Darwin is the harbour for shipping, is situate in latitude (of Fort Hill) 12° 28′ 30″ south; longitude 130° 52′ east. The harbour is very spacious, comprising many square miles of water, varying in depth from four to fifteen fathoms. It is high water, at full and change, 5 hours 25 minutes. Springs rise from sixteen to twenty-four feet; neaps, two to twelve feet. The tides are irregular—the ebb stream making 40 minutes before high water.

There are numerous branches from the Port, as will be seen on reference to the charts—one of the principal being that running to Southport, twenty-four miles from Palmerston, and the chief inland depot for landing and forwarding goods to the goldfields. This tributary is navigable for vessels of large burthen. A substantial jetty is erected at Southport for the accommodation of shipping and lightering. At Port Darwin preparations are being made for the construction of a jetty, to be carried out so as to afford a depth of twenty feet at low water spring tides. Two causeways have already been formed for present use, by which lighters can discharge into drays at almost any time of tide. The charge now made for lightering and landing goods from vessels is fourteen shillings per ton. The largest ships afloat can easily enter and safely anchor in Port Darwin.

THE SETTLEMENT.

By G. R. McMINN, Esq., Senior Surveyor.

Two hundred and seventy years have elapsed since the Dutch navigators first explored the north coast of Australia, making many discoveries in the shape of rivers and harbours,

that to the present day are little further known. Even previous to this date the Portuguese are supposed to have been acquainted with the existence of the present country. In the year 1772 Captain Cook circumnavigated Australia, adding further to the geographical knowledge previously obtained. After this but very little appears to have been done on the north coast until the settlement at Port Essington (one of the best harbours within the limits of the Northern Territory) was formed in 1831, by Sir Gordon Bremer. The settlement at Port Essington was established by the Imperial Government as a military post and harbour of refuge for distressed vessels. It received no support from private settlers; consequently it secured very little public attention. No attempt appears to have been made, on any extensive scale, to test the producing capabilities of the country. This establishment existed for nineteen years, being finally abandoned in 1850. It was during that period that Leichardt made his memorable journey from Sydney to Port Essington.

In 1862 Mr. John McDouall Stuart, a South Australian explorer (whose name, with the names of Gregory and Leichardt, is historically associated with the Northern Territory, and well deserves remembrance), succeeded in crossing the continent from Adelaide to Adam Bay on the north coast; and having reported the country as suitable for settlement, an application was made to, and a grant obtained from, the Imperial Government, by which all that portion of Australia lying between the 129th and 138th meridians of east longitude, and north of the 26th parallel of south latitude, together with the adjacent islands, was ceded to the Colony of South Australia; containing, independently of the islands, an area of about 531,402 square miles.

In 1864 the South Australian Government, for the purpose of inducing settlement on the north coast, sold a large quantity of land at a low rate; and Colonel Finniss, first Government Resident of the Northern Territory, was sent out with a large staff to execute the surveying. This expedition, from various causes, but chiefly from the land-owners objecting to the site selected by Mr. Finniss for settlement (Escape Cliffs), proved

a total failure, and was recalled, after having undergone many changes, in 1868, without having accomplished the survey, thus causing an immense waste of valuable time.

In 1869 another expedition was fitted out under the command of Mr. G. W. Goyder, Surveyor-General of South Australia, by whom the whole of the survey required was made in the following year. The site selected this time was Port Darwin and its immediate neighbourhood. Gold was discovered in different localities, during the execution of the work, by some of the survey parties, but not in sufficient quantities to warrant any one at that time in saying a payable goldfield existed. Shortly after this, Captain Douglas was appointed Government Resident of the Territory, and a permanent staff selected to assist in the official management of the new settlement. Captain Douglas retired in May, 1874, and Dr. Millner became Acting-Resident till the end of October, 1874, when the present Government Resident, Mr. G. B. Scott, assumed the direction of affairs.

As before mentioned, the area of the Northern Territory is computed at 531,402 square miles, the greater portion of which is admirably adapted for pastoral purposes, being well-grassed and watered. At present about 7000 miles are held by intending settlers. The amount of land surveyed was 653,000 acres; of this 274,000 have been selected, leaving the balance of 379,000 acres open for selection. The whole of this lies immediately around Port Darwin, and contains some very valuable blocks suitable for tropical agriculture.

The goldfields of the Northern Territory are now ascertained to be very extensive. At present gold is known to exist over a block of country containing about 1700 square miles, which has been indifferently prospected; and as country of a similar character extends for a much greater distance, it is more than probable that, when it has been prospected, the area already known will be but a small portion of the whole auriferous country. Many valuable gold-bearing quartz reefs have been discovered and worked; about ninety leases for mining have been granted, the larger portion of which are at present lying idle, owing to want of capital to develop them.

Rich deposits of alluvial gold have also been found; but it is believed that the main lead or deposit has not yet been struck; many competent mining authorities who have visited the Northern Territory giving it as their unqualified opinion that ultimately this will be one of the largest and best producing goldfields known.

At present there are several prospecting parties out at considerable distances; some of these have been largely assisted by Government, and considerable interest is evinced in connexion with their movements. Should the parties who are now prospecting happen to find a good alluvial goldfield, their success will be no more than is expected by a great number of experienced persons. Rich deposits of copper, iron, and lead, are known to exist throughout the country. These, however, will remain comparatively valueless until the construction of a railway to a place of shipment reduces the cost of carriage. The coast is annually visited by a large number of Malay proas from Macassar, their object being "trepang fishing;" and, judging from the perseverance displayed by these people in making a long yearly voyage, and the risks they encounter from other sources, they must find it a profitable occupation. Pearl-shell is also known to exist in many of the waters.

It should have been mentioned before that settlements were formed by Sir Gordon Bremer, both on Melville Island, in 1824, and also at Raffles Bay, near Port Essington, previous to the final adoption of Port Essington. At each of these places a number of buffalo were turned out, and these have increased to such an extent that at the present day large herds may be met with for more than 100 miles along the coast in the neighbourhood of Port Essington (where there are also a few English cattle and Timor ponies), also for a considerable distance along the coast.

THE LAND ACT

for the Northern Territory, as will be seen, has been framed with a view to liberality, and offers the following advantages to intending settlers:—Any applicant may apply for and receive the fee simple of any unselected country land which has

been first offered at auction and passed the hammer, or which has been declared open for selection, on payment of seven shillings and sixpence per acre. Persons so desirous may purchase land to the extent of 1280 acres upon "credit," that is, the land is applied for at the same price as before-mentioned; but, instead of paying the purchase-money down, the purchaser obtains a lease of the land for ten years at an annual rental of sixpence per acre, and the purchaser has the option of paying the full amount of purchase-money at any time during the currency of the term, and on so doing receives a grant of the land. Any person applying to the Commissioner for a special survey of 10,000 acres in any locality may obtain the same on paying the cost of survey, and receive the fee simple on payment of seven shillings and sixpence per acre.

A special clause of the Act that will unfortunately be of no avail after the expiry of the present year, but which it is hoped may be re-enacted, provides that whenever any applicant for country land states in his application that he intends to use the land applied for in the cultivation of rice, sugar, coffee, tea, indigo, tobacco, or cotton, or any other tropical or semi-tropical productions, he shall be allowed to select a block of country land not less than 320 acres nor more than 1280 at an annual rental of sixpence per acre; and if such applicant shall prove to the satisfaction of the Commissioner, at the expiration of five years, that he had at the expiration of two years cultivated one-fifth of the land selected, and after the second year an additional one-tenth of the entire area, and at the expiration of five years he had one-half of the whole of the land selected under cultivation with any of the aforesaid productions, and that the whole is enclosed with a fence, then the money that has been paid for rent will be considered to be the purchase-money for the land, and on application the purchaser can obtain the grant thereof. Thus the fee simple of such land only costs the applicant two shillings and sixpence per acre. Land may also be leased for pastoral purposes at a rental of sixpence per square mile for a term of twenty-five years; blocks applied for not to consist of less than twenty-five square miles nor more than 300 square miles. The run

must be declared stocked within three years from the quarter date next succeeding the date of the application, at the rate of two head of large cattle or ten head of small for every square mile of country applied for.

CHARACTER OF THE COUNTRY.

The land bounding the coast is in a great measure low and uninteresting, in very few instances being more than 100 feet above the sea level; wherever the coast is high, it is generally in the nature of cliffs, composed of sandstone, marl, and ironstone; the lower portions are partly sandy beaches, but principally mud flats, thickly fringed with mangroves. The country inland is, generally speaking, of a very level character, over which railways could be easily constructed, and is in a great measure destitute of conspicuous landmarks. At a distance of from 30 to 100 miles from the coast a tableland is met with, varying in height from 300 to 900 feet, and near the Victoria River it attains a height of nearly 1700 feet.

The rivers of the Northern Territory must not be overlooked, for many of them—the "Roper," "Adelaide," "South Alligator," "Liverpool," and "Victoria"—will hereafter prove to be of considerable importance for inland navigation.

THE CLIMATE.

By J. A. G. LITTLE, Esq., Senior and Inspecting Officer of the Post and Telegraphic Department, Port Darwin.

The year has two climatic divisions, consisting of the wet season, from October to April, and the dry period, from May to September. The different changes of these seasons are so uniform and regular that they may be predicted almost to a day. Signs of the approach of the wet season appear immediately after the sun has crossed the equator during the spring equinox, in September, when the strong E.S.E. monsoon—which has been blowing continually throughout the dry season—ceases, and is succeeded by calms and light variable winds; the weather becomes intensely hot, and small thunder clouds gather over the land, increasing in size and density day by

day, until they burst in terrific thunderstorms, accompanied by hurricane squalls of wind and rain. These storms at first take place every four or five days, gradually increasing in number until the end of November, when they occur almost daily. They come up in a dense black bank, and travel so very rapidly that they are generally out of sight on the western horizon within forty minutes. About an inch, or sometimes more, of heavy driving rain accompanies each storm; but in the year 1871 the writer of this article saw two inches and three quarters of rain gauged within ten minutes during one of these squalls.

During December the N.W. monsoon gradually gains the ascendency, and blows steadily, with an occasional break of calm weather. The thunderstorms disappear, the sky becomes overcast and clouded, and the atmosphere gets thoroughly saturated with moisture, so much so that leatherwork becomes green with mildew, if not constantly attended to; the binding of books becomes soft, and sugar or salt, if exposed in an open vessel, will soon liquefy. This is felt to be an agreeable change after the intensely hot weather, during the change of the monsoon in October and November; and although the humid atmosphere induces profuse perspiration, the effects of the weather are not nearly so unpleasant or severe as those attending the dry heat experienced in the southern portion of Australia during the same and two succeeding months.

The N.W. monsoon is accompanied by rain almost daily, and increases in force until the latter end of January or beginning of February, when it is blowing in full heart, and penetrates with its copious and fertilizing showers into the very centre of Australia. During this period thick, damp weather prevails, the clouds being very low, and scud and banks of nimbus pass over almost constantly from the N.W. to the S.E. with great rapidity. The maximum temperature in the shade during the day in this weather is 96°, and the minimum during the night is 65°.

On the approach of the autumn equinox, the N.W. monsoon gradually dies away, and is succeeded again by the calms,

variable winds, thunderstorms, and oppressive weather, until about the end of April, when cooler weather is felt, the S.E. monsoon sets in, and the dry season may be said to have fairly commenced. This wind is characterized by a clear sky, enjoyable weather, heavy dews, and cold mornings and nights, so much so that blankets can be used when sleeping. It blows off the coast without intermission, and with great force, almost throughout the season, being in full heart during June and July. At Port Darwin and other places adjacent to the coast the monsoon generally drops in the afternoon, and is sometimes succeeded by a sea breeze, which is merely local, and only extends a few miles inland. The atmosphere is clear and dry, and rather hot during the middle of the day. The maximum temperature in the day being 89°, and the minimum during the night 56°.

With regard to the suitability of the country for European labour, the writer of this article can affirm—after four years' experience—that a man cannot perform the amount of constant work that he is capable of accomplishing in a more temperate climate; but still there is nothing to prevent a moderate day's work being done—and further, there is an almost entire absence of those enervating influences which prostrate the European labourer in other tropical countries, such as India, Java, Singapore, or Africa. Workmen carry out their various avocations throughout the day without taking any precaution to ward off the rays of the sun—the eight hours' system being usually adopted, as in other parts of Australia. The climate, in fact, may be said to be more of that type which is generally known as Australian, rather than tropical; and the same remark will—with very few exceptions—also apply to the *flora*, *fauna*, and perspective of the country. It is free from cholera and other scourges of hot countries, and on the whole may be considered healthy. Intermittent fever, commonly known as fever and ague, is prevalent at times, especially in low-lying localities, or immediately after the wet season; but this complaint is not dangerous in itself, and can often be prevented by a moderate and judicious use of medicine and a small amount of bodily exercise.

The insect nuisances, such as flies, mosquitos, or sandflies, disappear very quickly on any extent of timber and grass being cleared away. Clothing of a light description is worn throughout the year—white being the best; but, owing to the absence of "dobies," or native washerwomen, any new comers should for the present bring a plentiful supply of coloured articles. Cloth or tweed clothing is not often used, and flannel is not recommended, as it produces attacks of prickly heat. Persons contemplating planting any kind of tropical produce should arrange to have their ground cleared in the dry season, and ready for seed during the commencement of the rains in October, so that the plants may have the full benefit of the wet season and humid weather. Vegetable growth is very rapid immediately after the rains set in, and the country becomes covered with grass knee-deep in the course of a few weeks. This grass runs up to a height of about six or eight feet during the wet season, and ripens early in May, when it is burnt. It springs again on flats or damp places, and generally continues green and fit for fodder throughout the year. The following is a statement of the rainfall for the last four seasons :—

Wet season—	1871–72	77·801 inches.
"	1872–73	62·254 "
"	1873–74	57·550 "
"	1874–75	56·000 "

THE OVERLAND TELEGRAPH.

By J. A. G. LITTLE, Esq.

On the return of Mr. John McDouall Stuart, the explorer, to Adelaide in the year 1862, after having successfully crossed the Australian Continent from the southern seaboard to the northern coast, in the course of which journey he proved the existence of a practicable route interspersed with tracts of valuable country in a region hitherto considered an impassable desert, the idea of constructing a line of telegraph—two thousand miles in length—through to the northern coast, and so opening up and utilising the country discovered by Mr. Stuart, and also to connect with an Anglo-Australian cable to

be brought down to meet it from Singapore or Java, was at once grasped by Mr. Charles Todd, the present Postmaster-General of the Colony, and speedily cast into form by him and brought before the authorities of the day.

The measure, though generally approved of, was considered a little too large for the then resources of the Colony, which at that time contained a population of only about 150,000 people, and yielded an annual revenue of £500,000 sterling; so the question was postponed from year to year in an indefinite form, although Mr. Todd never lost sight of it, and frequently urged the importance of the matter on the Government.

In the meantime the Colony had formed a small settlement under the management of Lieut.-Colonel Finniss on the northern coast at Escape Cliffs, near the mouth of the Adelaide River, which after two or three years had to be abandoned in favour of another at Port Darwin, under the control of Mr. G. W. Goyder, Surveyor-General of the Colony; and subsequently of Captain B. Douglas, Collector of Customs of South Australia.

These settlements suffered very much from their isolated position and want of communication with the settled districts in the more southern portion of Australia, and so the idea of a line of Telegraph from Adelaide to Port Darwin slowly and steadily found favour until 1870, when the successful and profitable working of the Atlantic and Anglo-Indian cables gave an impetus to telegraph extension all over the world, resulting in the formation of the British-Australian Telegraph Company, for the purpose of putting down a cable from Singapore to Port Darwin *viâ* Java.

The South Australian Government, acting under the powerful advice of the Governor—Sir James Fergusson—and also of Messrs. Strangways, Ayers, and other leading politicians of the day, decided at once to carry out the scheme of the Overland Telegraph recommended by Mr. Todd, and undertook to complete the whole and have it ready to meet the cable on January 1, 1872, a period of about twenty months. The work was then placed in the hands of Mr. Todd for execution, and he, with an admirable system of organization and ingenuity,

tided it over many great and unforeseen difficulties, and brought it to a successful completion.

Six hundred miles of the work at each end were let to public contractors, acting under Government Superintendents, no great difficulty being anticipated on either of these two sections; but Mr. Todd reserved the section in the centre—about six hundred miles—eventually extended to nearly eight hundred miles, and which, it must be remembered, had only been traversed by one lightly equipped party of white men—Mr. Stuart's—to be constructed under his own immediate supervision.

He divided the work on this central portion into five different parts, and commenced organizing parties of officers and men for each section; five officers of known ability and experience, viz.:—Messrs. Knuckey, G. R. McMinn, W. W. Mills, A. T. Woods, and W. Harvey—all of whom had taken leading parts in the pioneer expedition to the Northern Territory—being selected to take command of the different parties.

Every care and forethought was exercised in the preparation and outfit of these parties, who, it must be remembered, had to travel for months, with their waggons loaded with wire, material, rations, tools, and every other article required, over long stages—the furthest nearly twelve hundred miles in length—before they got on to their ground; and over an uninhabited region, where water was supposed to be scarce, where roads had to be made, bridges constructed, wells sunk, high precipitous ranges, and belts of desert and lofty sandhills crossed; the three latter obstacles having proved in previous times almost insurmountable difficulties to Mr. Stuart's exploratory expeditions. This region was so utterly unproductive with regard to game and other articles of sustenance that every ounce of food required, until the completion of the work, and also for the return journey, had to be taken with them.

The parties proved to be so well organized and ably led that they arrived on their ground without any hitch whatever, and not only completed their portion of the line, within the estimated time, but also erected one hundred miles extra of

poles, and on the arrival of more wire, finished off in all about two hundred miles of line in addition to their legitimate portion. Great difficulty was experienced throughout the sections owing to the scarcity of suitable timber for poles, but by traversing the country in every direction, and carting the poles great distances—sometimes over one hundred miles—the requisite number was at last obtained.

While everything was progressing so very satisfactorily and smoothly on the most difficult portion of the works, the contractors at both ends were encountering difficulties. Assistance was promptly rendered to the Southern contractor, which enabled him to complete the works within a few weeks after time; but the expedition of the Northern contractor, after erecting about 220 miles of poles, collapsed entirely—most of the draught stock required for transit having died, and nearly all the men returned to Adelaide.

The Government immediately sent round to Port Darwin by sea a large and most powerfully equipped expedition under the command of Mr. R. C. Patterson, the Assistant Engineer-in-Chief of the Colony, to promptly finish off the work; and, as an additional inducement, offered the Assistant Engineer a bonus of £1500 if he managed to get the work done in time; but this party also encountered difficulties, which rendered the completion of the work within the specified time hopeless. The Government therefore sent Mr. Todd himself round with reinforcements, and he very wisely took his steamers 100 miles up the River Roper in the Gulf of Carpentaria, and made that place the base of operations, instead of Port Darwin, thus saving about 300 miles of carting, and obtaining a better road. An unprecedentedly wet season was encountered immediately after his arrival, rendering the country impassable for loaded teams for some time; but as soon as the weather improved, great activity took place, and Mr. Todd completed the line on August 22nd, 1872, being a little over eight months after time.

The British-Australian Cable, after being successfully laid, broke for some little time, and was not repaired until October 22nd, 1872, when telegraphic communication was established between Australia and all parts of the World—the first recipients

of a message from London being Messrs. MacEwans & Co., of Melbourne. The beneficial results of this great work became apparent at once. Within six months after the opening of the line the Colony netted nearly a quarter of a million sterling extra on their wheat harvest through the telegraph enabling sales to be made in foreign markets.

Gold, discovered in payable quantities by the Northern contractors' party, led to the opening up of valuable goldfields and the settlement of a considerable number of people in the Northern Territory. Fine deposits of copper, lead, and iron, have since been discovered, and will no doubt at some future time prove highly remunerative. Stockholders quickly pushed their herds out along the line, and at the present moment the country near the centre of Australia is being rapidly taken up for pastoral purposes. All classes were directly or indirectly benefited, seeing at once the utility of this great reproductive work, which it is hoped will soon be followed by a railway along the same route, and which, with a corresponding measure for the introduction of a proportional amount of population, will still further develop the fine resources of the whole country. Since the completion of the line, iron poles have been gradually introduced to replace the wooden ones, which, when finished, will render the work thoroughly substantial, and reduce the maintenance expenditure to a minimum.

THE GOLDFIELDS.

By J. A. PLUNKETT, Esq., Chief Warden.

From Palmerston, the chief town of the Northern Territory, to the nearest officially recognized gold-bearing reefs—those at Stapleton—the distance is about sixty-four miles in a south-south-eastern direction. To avoid a long detour by land, the first part of this journey—as far as Southport, which is twenty-five miles, is usually made by water, up an estuary of Port Darwin Bay. For the remainder of the distance—and, indeed, all the way to the most southern and distant reefs—there is an excellent bush road; which, moreover, has been improved in various places, and is maintained in good order by road parties employed by the Government. Here it may be observed that

all through the settled parts of the Territory the bush roads are exceedingly good, and generally keep in excellent order for traffic—except, of course, during the four or five months of the rainy season, when they are nearly impassable.

From Stapleton to the most southern reefs—those at Pine Creek—the road is about ninety miles: it runs the entire way close to the Overland Telegraph Line; and though it winds about here and there, it takes on the whole a south-eastern course. All the quartz reefs in the Territory on which any work worth mentioning has been done, and all the alluvial diggings, lie either east or west of this road—most of them being within a few miles of it, and the furthest from it not being more than twelve miles to the east. From this it will be seen that the whole of the gold-bearing country which, as yet, has been proved to be of any value stretches away in a south-eastern direction from Stapleton; though it must be added that small quantities of gold have been discovered in many other parts of the Territory. In a brief sketch like this, it would be impossible to notice separately the fifteen or sixteen different places in which gold-mining operations have, at some time or other, been carried on; and so the remarks made here must, for the most part, be of a general nature. In none of the places just mentioned has the search for gold been entirely unsuccessful; and nothing surprises one more than the little difficulty people appear to have had in discovering, anywhere in the country between Stapleton and Pine Creek, either auriferous quartz or auriferous clay. It must, though, be admitted that the amount of success has been far from uniform, and that in many instances the gold obtained has been altogether inadequate to compensate for the labour expended in getting it: but, as will be shown further on, the ill luck in these cases has been more than counterbalanced by fortunate results in others.

Except one or two reefs, which run nearly due north, the reefs for the most part extend in a north-western or a north-north-western direction, and in several instances they can be traced for two or three miles. They lie, generally, in ranges of somewhat rugged hills; though in one or two places they are in

flat ground. Those, however, in the hills have hitherto proved far more valuable than the others. As might be expected, there is great diversity in the size and quality of the different reefs. Some of them are several feet wide, while others, properly speaking, should not be called "reefs" at all, being only narrow "leaders"—though the latter are usually more clearly defined, and, in proportion to size, much richer than the former. Generally speaking, the owners of a quartz claim in the Territory obtain auriferous stone from the very surface of their ground, but find that, as they sink, the reef or leader, as the case may be, widens considerably, but decreases in richness: hence it happens that the results of the first crushings are usually much richer in proportion to the stone operated on than those of subsequent crushings—though, owing to the increased quantity of stone, and the increased ease with which it is obtained, the latter crushings are generally more remunerative in proportion to the money and the labour expended. This last remark applies more especially to some of the hill claims, where, to facilitate operations, tunnels have been driven to meet the bottoms of the shafts. It may be said of all the reefs in the Territory that, whether the gold-bearing stone in them is rich or not, there are but few difficulties to contend with in getting it: in fact, if some means could be devised for storing, during the wet season, large quantities of water sufficient to last the different batteries through the remainder of the year, the engineering difficulties connected with quartz mining in the Territory would be very small indeed. No very deep sinking has been necessary as yet; the shafts, even in the midst of the rainy season, are quite free from water; and nowhere are there any obstacles to prevent the making of a good road or tramway, either to a battery already erected or to a convenient site for a battery.

Up to the present, though a great deal of money has been expended in quartz-reefing on the goldfields, and a good deal of stone raised and crushed, it cannot be said that as an industry quartz-mining has been fairly tried in the Territory. The fact is, the work done has been distributed over too many places;—too many claims have been tested in a superficial and

desultory way, and too few systematically worked. Notwithstanding this, however, it is an undeniable fact that, counting all the stone crushed in the Territory from the very first till now, the average yield of gold has been more than one ounce for every ton of stone crushed; and, if we take as a criterion the more recent crushings only—that is, those of the last seven months—there is good reason for expecting that in future the average yield will be considerably greater.

At present the only reefs to which any attention is being devoted are (taking them in order from north to south) the Stapleton Reefs, the Howley Reefs, the Britannia Reef, the Yam Creek Reefs, the Extended Union Reef, the Union and the Lady Alice Reefs, and the Pine Creek Reefs. But of these, the Union and the Lady Alice Reefs, and the Pine Creek Reefs, are the only ones on which work is being done on anything like an extensive system. As has been already indicated, it is impossible in this sketch to notice specially the different claims; but the following facts will, it is hoped, help the reader to form something like a correct estimate of the value of the quartz reefs generally.

The present writer, in his capacity as Chief Warden, has made it his business to collect from time to time, for his official reports, all the information he possibly could about the goldfields; and in this way he has managed to obtain full and, he believes, pretty accurate accounts of no less than thirty-three crushings, all of which have taken place since the resumption of crushing operations in the early part of last December. For some of these crushings, no doubt, care was exercised in selecting the stone; while in other instances quartz and mullock were indiscriminately collected and passed through the batteries. From some of the crushings, the yield of gold was as low as a few pennyweights to the ton of stone; but from others it was four, or five, or six ounces to the ton; while in one instance, a few tons of quartz yielded eighty-one ounces of gold to the ton of stone.

The total result, however, of the thirty-three crushings is as follows:—2732½ tons of stone have yielded 4327 oz. 18 dwt. of gold, or a little more than 1 oz. 12 dwt. for every ton;—a

result which speaks for itself, and goes far to warrant the good opinion which many persons still entertain respecting the Northern Territory quartz reefs. This calculation does not include all the crushings in the Territory since the 1st of December; but it includes every one since then of which the writer has been able to obtain the particulars, and there have been but few others. There are at present ten crushing-machines in the Territory;—one at Stapleton, one at Howley, four at Yam Creek, two at Union, and two at Pine Creek.

So much having been said about quartz-reefing, it becomes necessary now to say a few words about the alluvial diggings. Alluvial digging has been tried in a small way, and with varying success, in the neighbourhood of several of the reefs; but the only diggings that can be noticed here are the principal ones—those at Sandy Creek, at Stewart's Gully, and at Sailor's Gully, all of which lie near the Yam Creek reefs. Sandy Creek and Stewart's Gully extend north and south, but Sailor's Gully runs east and west. The first-named place is on a confined flat in a valley, while the two other diggings are—as their names imply—in narrow glens. In these places about fifty people are engaged in alluvial mining; but only very few of the claims can be said to pay well, and from many of them the yield of gold is very small indeed. The ground seems to be what diggers call "very patchy," that is, the owners of a claim may find a fair amount of gold one day, but after that work for several days without getting any. Up to the present, there has been no deep sinking on any of these diggings. A nugget weighing over twenty-two ounces—the largest ever discovered in the Territory—was found recently in Stewart's Gully; but this piece of luck must be regarded as somewhat exceptional, and Stewart's Gully is gradually being deserted owing to the scarcity of water, the diggers moving for the dry season to Sandy Creek, where there is water all the year round. There exists great diversity of opinion as to the value of these diggings. Some persons of good experience maintain that, if the claims were smaller and the number of diggers increased, the more thorough examination of the ground which this would cause would be

sure to result in some valuable discoveries. There are others, however, of equally good experience, who hold quite the opposite opinion, and consider the ground to be naturally very poor. The writer ventures to think that the latter persons are correct in their opinion; and though it cannot be denied that many persons have done pretty well on these diggings, he considers that, on the whole, alluvial digging in the Territory has so far resulted in but little success.

It only remains now to say a few words about the Gold Mining Law and Regulations.

A gold-mining claim in the Territory can be held under either a miner's right or a lease. A miner's right costs 10*s.*, and remains in force till the first of December following the date on which it is issued. It can, of course, be renewed like any other licence. It empowers a man to hold as an "ordinary claim" an area of ground, 25 yards by 25 yards for an alluvial claim; or 30 yards by 30 yards (in old ground) for a puddling claim; or 200 yards by 250 yards for a quartz-reef claim. In the event of fresh discoveries being made at certain considerable distances from ground already worked on, "prospecting claims" are granted varying in size according to the distance from the old claims; but the smallest "prospecting claim" is double the area of an ordinary claim. Besides complying with a few necessary formalities, the holder of a claim has only to work it properly in order to retain it, and for every three months' work done on it, he is entitled to obtain three months' exemption from working it. If he does not comply with the formal regulations, or if he does not work his claim, he is liable to forfeit it; while, if he abandons it altogether for a certain time, anyone else having a miner's right can go on the claim and take possession of it.

Under the Regulations, too, very liberal provisions are made for enabling the holders of miners' rights to obtain, on the payment of certain fees, the right to take up areas of ground for residence sites, business sites, dam and machine sites, &c. &c. All disputes respecting ground held under miners' rights are settled by the Warden, from whose decision, however, an appeal to the Palmerston Local Court is allowed.

The holders of quartz claims, or of "*deep sinking*" alluvial claims (of which latter, however, there are none in the Territory), by applying to the Government Resident, through the Warden, can obtain leases for their claims, varying in duration from seven to twenty-one years, and at a yearly rent of 10*s.* an acre. Leases for similar periods, and at a similar rent, can also be obtained, for machine, race, dam, or reservoir sites, of areas of ground varying in extent from ten to twenty acres. The regulations respecting the working of leased claims are nearly the same as those for the working of claims held under miners' rights. The great advantage of having a lease is—that the holders cannot be compelled to give up their ground, unless by the Warden's taking proceedings against them in the Local Court at Palmerston, which, of course, would not be done for any mere technical breach of the Regulations, or unless there were very good cause.

In concluding this brief sketch, the writer wishes to say that, in the space allotted to him, he has not been able to give, nor has he aimed at giving, anything more than a general account of the goldfields. He hopes, however, that notwithstanding this his remarks may be found useful in assisting persons at a distance to form some idea about the prospects of gold-mining in the Northern Territory.

INDIGENOUS VEGETATION.

BY J. C. KNIGHT, ESQ.

The indigenous products of the Northern Territory, like the rest of the Australian Colonies, yield little or nothing adapted to sustain civilized life, while they afford sufficient to support the aboriginal population. The native grasses have, however, been practically tested, and found to yield abundant nutrition to fatten horned cattle and horses. When it is stated as a fact that for hundreds of miles inland there is scarcely a foot of ground which is uncovered by trees, plants, or herbage of one kind or another, growing in rank luxuriance (in some cases on rocky strata, without any apparent soil to sustain vegetable existence), and that such fruits as the banana, cocoa-nut, custard-apple, pine-apple, and tamarind, thrive on a

hard clayey or iron-stone soil, within a few yards of the sea, it may not be unreasonable to infer that the jungle and swamp might be speedily reclaimed and made to yield, under the genial tropical influence of this peculiar clime, productions of great commercial value.

NATIVE WOODS.

[*This Article refers particularly to Specimens of Timber forwarded to the Philadelphia Exhibition.*]

The coast of the Northern Territory does not appear to be so abundantly furnished with useful and ornamental woods as some other of the Australian Colonies; but as no steps have yet been taken to explore the country for timber, it would be premature to speak very positively on the subject. In starting to make a collection of native timber, the writer has been agreeably surprised at the variety and beauty of some of the specimens he has met with. They have been obtained in haste, and do not represent a fiftieth part of the different kinds growing in the Territory; allowance must also be made for the specimens being cut from the growing trees, and forwarded without the slightest chance of "seasoning."

Notwithstanding these drawbacks, some of the samples will be found well worthy of examination, particularly the following:—

No. 1. Locally called "paper bark"—is one of the most abundant as well as one of the best woods in the Territory; it grows to a diameter of three to four feet, and is admirably adapted for piles, girders, bed-plates for engines and stamping machinery, ship's knees, and heavy carpentering in general. This is one of the few timbers not attacked by the white ant.

No. 2. Termed "iron bark"—is an excellent wood, very dense and durable; might be used in many cases as a substitute for *lignum vitæ*. The tree grows to an average diameter of eighteen inches, and is pretty plentiful. I think the wood is superior to the iron bark of the Southern and Western Colonies of Australia, and it is certainly handsomer in grain. It is proof against the white ant.

No. 3. Known as cypress pine—is an excellent timber, well

adapted both for carpenter's and joiner's work, being clean in the grain and easily wrought. The tree grows to a diameter of twelve to eighteen inches, and is rarely touched by the ant pest.

No. 4. Called bloodwood—is one of the most abundant of the useful woods—both it and paper bark being chiefly used in the construction of bridges on the road to the goldfields. It is a fine sound timber, and is found up to two feet six inches in diameter.

No. 5. Tecoma — is worthy of special examination as a handsome wood for furniture, resembling, as it does, the much admired tulip wood of Queensland. It is found near Palmerston, and in many of the jungles. The bark of this tree is said to yield valuable tannin matter for medical purposes.

No. 6. Termed red cedar—is another showy furniture wood, capable of being successfully introduced in decorative work.

No. 7. Usually called cedar—is a furniture wood, suitable to be worked in with No. 6.

No. 8. Called milkwood, from the fact of the tree, on being tapped, yielding a fluid resembling milk. This wood, being easily wrought, is adapted for many kinds of cabinet work.

No. 9. White cedar. The texture of this wood is very similar to pine; it may, therefore, be classed as a useful and inexpensive timber.

No. 10. Blackwood. This timber does not grow to a very large size, the trees usually met with not exceeding fifteen inches in diameter; it is a sound and valuable wood, and, for some purposes, a not inelegant substitute for walnut.

No. 11. Banyan. This tree yields but a small quantity of straight wood, the trunks and branches being always greatly contorted. It might be tried for wood engraving.

No. 12. Mangrove. This most extraordinary tree forms a dense belt of vegetation along the banks of the rivers, as well as on the sea coast. It appears to flourish under tidal influence—its numerous roots branching from the trunk above ground and appearing as resting on the surface, rather than penetrating the soil. There are many varieties of this timber,

some of which show wood of great beauty in the variations of colour, these being apparently due to the chemical action of the sea water upon the fibrous structure of the timber, and not to changes of tint due to the annular growth of the tree. The bark of the mangrove is valuable for tannin, and is believed to be rich in potash, but I have not yet had the means of testing it. It also yields a good dye. A sample of the bark is exhibited, to which the attention of chemists and tanners is particularly invited.

No. 13. Called cedar—a good useful wood.

No. 14. A rich yellow wood.

No. 15. Plum tree.

No. 16. Eugene apple; a curiously striped wood.

No. 17. Called lancewood, useful for boat-building.

No. 18. Satinwood, a bright yellow timber, useful for furniture.

No. 19. Prickly ash.

No. 20. Honeysuckle.

No. 21. Called the quinine tree. A decoction of the wood yields a strong bitter, said to be good in cases of fever.

No. 22. Fan Palm. This wood is prized for making walking-sticks, picture-frames, &c.

No. 23. Wild nutmeg tree.

No. 24. Cabbage Palm. This wood is much sought after for making walking-sticks, billiard cues, and the like.

No. 25. Prickly ash.

No. 26. He-oak.

No. 27. A wood plentiful in the jungles.

No. 28. Bamboos grow to a diameter of four or five inches, and often used in the interim for making houses. Some very pretty cottages have been built entirely (including the roof) of bamboo.

ACCLIMATIZED VEGETATION.

Nature appears to have bequeathed to Art a soil and climate capable of yielding, under proper treatment, a prodigal return for skilled cultivation. Nearly all the kinds of tropical fruits and vegetables which have been fairly tried are found to thrive

and flourish in these latitudes. The plantain and banana grow wherever they are stuck in the ground, and produce excellent fruit. A number of cocoa-nut trees planted three or four years ago look in splendid condition. Pine-apples of delicious flavour reach maturity with great rapidity in the Government Botanic Garden. The "custard apple," also known as "sour sop," and the papaya yield most delicious fruit. The tamarind tree grows well. The guava thrives also, as likewise the rosella. Splendid specimens of the mango are obtained at Port Essington. The lemon and orange trees in the Government Garden are growing rapidly, and appear to take kindly to the soil and climate. In vegetables, the melon tribe succeeds admirably, and will soon grow as weeds in certain favourable localities. The yam and sweet potato are being cultivated with great success. Arrowroot has been tried on a small scale, and thrives exceedingly well.

Excellent "sugar cane" is grown at the Government Gardens. It is believed that the tea plant would thrive well in certain districts, and the same may be said of spices, but none have yet been planted. One or two cotton trees in the grounds of the Government Resident have yielded excellent-looking staple. "Indian corn" has been sown in several portions of the Territory, and from the success which has attended the experiments its cultivation will soon be greatly extended. In provender for cattle, the couch grass thrives in a wonderful manner, and is eaten with avidity. The buffalo grass also promises to grow both rapidly and well.

The few fruits and vegetables above referred to afford but a faint idea of what is capable of being successfully cultivated, for, as a matter of fact, there has not yet been any experimental gardening attempted beyond the little done at the Government Botanical Garden and in the grounds of Mr. Little, the Sub-Inspector of the Telegraph. However, the trifling amount of work already done has shown such excellent results that gardening is now beginning to be thought of in earnest. Gardens have been formed on the principal quartz mines at the goldfields, and the benefits of having a supply of fresh vegetables are being manifested in the improved health

of those engaged on the claims. All the cultivation up-country is being performed by Chinese Coolies—white labour being by far too expensive for such work.

NATIVE ANIMALS.

The ordinary types of the Australian Fauna are found here. The irrepressible kangaroo and emu, bustard (wild turkey); the pelican, wild goose, and duck, teal, widgeon, plover, quail, and several varieties of beautiful pigeons, king-fishers, black and white cockatoos, and parrots, are met with, and plentiful in their particular haunts.

The waters of Port Darwin may be said to be full of fish, but, unfortunately for the people, they are very difficult to catch with hook and line. The supply of the local market is now in the hands of one or two Malay boatmen, who frequently manage to net in the course of an hour as many fish as they can sell for £4 or £5. With this money they retire to enjoy themselves, and only return to marine pursuits when they require fresh funds, leaving the townspeople in the interval craving for this kind of food, so suitable for a hot climate. A steady and constant fisherman, properly equipped, would soon realize a fortune in Port Darwin. Fine large turtle are often seen in the harbour, but are rarely caught. Oysters of excellent flavour are plentiful at Port Essington, where an establishment for curing trepang has been started by some enterprising settlers.

Snakes are not so frequently met with in the Northern Territory as in many other parts of Australia. Those of the Python kind appear to be the most numerous. They are found sometimes fifteen feet in length, and are very fond of visiting hen-roosts. The writer has never heard of any fatal case of snake poisoning.

Crocodiles abound in some of the rivers, especially the Roper and the Adelaide; they are sometimes seen and have also been felt in Port Darwin and in the river to Southport. Some small specimens are exhibited in bottles, and also the eggs.

Centipedes, big spiders, and scorpions are sometimes met

with when not sought for—chiefly in old wooden buildings. Cockroaches and crickets are pretty plentiful and very destructive. However, as good stone buildings with cemented or tile floors supersede those of wood, these domestic nuisances will become less and less. Our old friend, the "rodent," has not neglected visiting the Northern Territory. One of his favourite nocturnal pastimes is to run along the framing of your roof and tumble on the sleeper in his hammock.

The white ant pest deserves a special paragraph; in appearance it is fat and yellow, about the size of the gentles used by anglers—the creature is rarely seen unless unearthed, always working under cover, protecting itself by a shield of glutinous earth as a shelter from the attacks of its constant enemy, the small black ant. The white ant appears to have a wide margin for taste—it eats through almost anything—leather, wood, tobacco, soap, books, clothes,—nothing short of sheet-iron will arrest its ravages. Ordinary fir or pine, or ordinary hard wood, afford this ravenous insect a special feast, and no timber except cypress, pine, and paper-bark, iron-bark, bloodwood, and a few other woods, obtained in the Northern Territory, or the jarrah from Western Australia, is capable of withstanding its attacks. Some specimens of ant-eaten wood are exhibited, as well as a portion of the ant-hill. There are hundreds of thousands of these hills in the Territory, many being upwards of 25 feet in height, and 6 feet to 10 feet in diameter. They are very strong, resisting the heavy pressure of tropical rains, the larger ones appearing to be of great age —possibly some hundreds of years. There is another destructive insect called the "borer," not met with near the sea-coast, but very active and mischievous inland, its attacks being chiefly levelled against timber. This creature is about the size of a small fly. Its head is armed with a kind of auger, which it drives with great force against the wood proposed to be attacked. The point of the auger is inserted while the body performs a series of rapid revolutions, perhaps a thousand in a minute, and thus bores a hole into the timber as perfectly as could be executed by a carpenter's gimlet. On a still night the noise of this boring operation can be dis-

tinctly heard. In consequence of the destruction caused to wooden buildings by the ravages of the white ant, the Government authorities have determined on erecting all future structures of stone, with concrete floors faced with Portland cement. Mosquitos and sandflies are very troublesome, especially between the months of January to April, and mosquito nets are very generally used; the best material for this purpose is cheesecloth—muslin not being strong enough to stand the wear and tear to which they are liable. These nets are usually made about 6 feet 6 inches long, and 3 feet high, with a strong calico top and bottom—a slit being made along the centre of the bottom, through which the person enters, and as the body covers the opening thus made, the curtain is proof against the inroads of all insects; it is like getting into a cage, and placing your back against the door. Travellers in the bush usually have a fly, *i.e.* a light awning, nine or ten feet square, over their curtains, to keep off the night dew, and with this arrangement over a hammock, slung between two trees, enjoy the most healthy and undisturbed repose. The writer has been nearly as much troubled with mosquitos in South Australia, Victoria, and New South Wales, as in the Northern Territory, but not for so many months in the year.

LIVE STOCK.

The buffalo appears to thrive well in the Northern Territory; large herds are met with on Melville Island, thirty-five miles from Port Darwin. At Port Essington they are so numerous, together with Timor ponies, that large tracts of country (over 1200 square miles) have lately been taken up under lease by Messrs. Lewis, Levi, and Way for the purpose of collecting these wild possessions of the soil, to supply the market at Port Darwin. It is also intended to form a cattle station there.

Imported horned cattle fatten well; a herd of bullocks, brought over from Queensland by Mr. de Lautour, were in splendid condition, which was further improved by grazing for a time at Knuckey's Lagoon, thirteen miles from Palmerston. The sheep driven from Queensland to the inland stations of the Telegraph Department thrive well, but do not appear to

get on so favourably near the sea-coast. The Saxon merino sheep seem to take more kindly to the pasturage, and will probably be selected as the sort best fitted to the Territory. A solitary deer brought from Timor became quite fat, when it was sacrificed to the demand for fresh meat. It is to be hoped that some deer will be introduced and set loose for the benefit of the sportsmen, as well as for the purposes of trade.

BUILDING MATERIALS.

The woods having been already referred to, a few words may be devoted to some other of the materials used in building.

Granite is met with in immense masses at the Finniss River, forty-six miles from Palmerston, and over hundreds of square miles beyond.

Sandstone is abundant, especially along the coast; the town of Palmerston rests on a bed of this material, which appears to consist of a fine loamy sand or marl, hardened by pressure and chemical action, and interspersed with numerous fossil impressions. Fossils are very rarely met with; the samples marked A show two or three, which are all that could be found after a good deal of searching. The stone makes excellent rubble masonry, but is too full of shakes and veins to admit of its being wrought into large ashlar. The harder seams yield fair road metal.

Clays.—Fine micaceous clays of a marly character, both white and yellow, are readily found. These clays, when mixed with ironstone sand, make excellent bricks, and will no doubt be largely used when the real City of Palmerston begins to be erected.

Lime.—No limestone has yet been met with in the settled districts, and, so far as a superficial examination of out-cropping strata enables one to judge, it is not likely to be found. In the absence of limestone, Nature has provided some large deposits of shells close to the town, from which excellent lime is made.

Sand.—After several experiments made by the writer of drift and pit sands, it has been found that the dark-coloured ironstone detritus with lime makes the best setting mortar. A fair substitute for lime mortar is found in the earth of which

the ant-hills are formed, the ant producing a glutinous substance to bind the earthy particles together. This material, when moistened and beaten up, makes an excellent floor, and answers for bedding brick or stone.

Bark.—Rough buildings and settlers' huts are usually roofed with bark, which is cut and brought in by the blacks. This bark makes a cool and weather-proof roof for two or three years, but looks rough and unsightly. The better class of buildings are covered with galvanized corrugated iron, No. 26 gauge, which, when coated with white on the outside, is found to be the best kind of roofing.

The new settler can readily make for himself a comfortable log-hut by using upright poles about six inches diameter, two feet in the ground and ten feet above, and covered with a roof of bark.

PALMERSTON.

The township of Palmerston is well selected on the margin of Port Darwin. A plan of the town shows that it occupies an area of about 800 acres, including roads and reserves, and embraces 946 allotments, each being half an acre. The principal buildings are the Government Residence, the offices of the British-Australian Telegraph Company, the offices of the South Australian Overland Telegraph, and residences for the officers, the new Police Station and Gaol, the Government Offices, Local Court House, and residence of Colonial Surgeon, the Palmerston Hospital. Several of the Government officers have quarters in a place called the Camp, at the foot of Fort Hill. The principal stores are those belonging to Mr. Lindsay, Mr. Adcock, Mr. Allen, and Mr. Skelton. A large auction room is established by Messrs. Cohen and Solomon. The only bank is a branch of the English, Scottish, and Australian Chartered Bank.

The geographical situation of Port Darwin is superior to that of Singapore or Macassar for trading with the neighbouring islands, as vessels can sail to the northern groups either in the east or west monsoons, whereas in the case of Singapore or Macassar the proas can only visit them once in the course of a year. Many of the islands within a week or two's sailing

distance from Port Darwin contain large and intelligent populations ready to trade with English Colonies in preference to the Dutch. Valuable products, such as tortoiseshell, pearl-shell, trepang, nutmegs, palm wine, &c., are obtainable from these places, as well as valuable and cheap labour of the kind so much needed in the Northern Territory.

The wages paid to mechanics in Palmerston are 15*s.* per day, labourers 10*s.*; those working up the country receive higher rates; good working miners on the goldfields are paid £3 per week, with their board, or £4 10*s.* per week without board. A few steady domestic servants would find ready engagements at £1 per week or more.

The charge made for board and lodging at the hotels is 35*s.* per week. Of course where two or three live together, and cater for themselves, the cost is less than the above amount. The following are about the average prices of provisions:—Fresh meat per lb., 1*s.* 3*d.*; bread the 2 lb. loaf, 9*d.*; preserved meat in tins, per lb., 1*s.*; fresh potatoes per cwt., £1 5*s.*; fresh onions per lb., 9*d.* to 1*s.*; flour per cwt., £1 6*s.* Few people pay rent, mostly living in tents, huts, or houses built by themselves. A good deal of domestic drudgery is saved by the labour of the aborigines, who cut wood, carry water, and wash clothes, in return for which they receive a little flour, and the scraps from the table. The foregoing plain and unvarnished facts and figures are submitted alike for the information of the capitalist and the working classes. To the former it is suggested that there are few places in the world which offer land capable of yielding all kinds of tropical and subtropical products so readily and on such advantageous terms as this Northern Territory of South Australia; and with regard to its resources in gold, there is an immense area known to be auriferous, in which hundreds of quartz reefs have already been found, many of them having been proved, even by inadequate machinery and too costly labour, to be remunerative.

To the latter, if belonging to the really industrious classes, it may be said that no man able and willing to do a fair day's work for good wages is likely to remain unemployed.

To another—unfortunately too numerous—class, which

includes neither the capitalist, the trader, nor the *bonâ fide* working man, the earnest advice of the compiler of this sketch is—stay away. As to the climate, the writer with his son have been two years in the Territory, and have never had an hour's sickness.

CONCHOLOGY OF PORT DARWIN.

By W. T. BEDNALL, Esq.

The northern coast of Australia forms the southern boundary of the Indo-Pacific molluscan province, and Port Darwin is situated about the centre of it—having New Guinea to the north-east, and the islands of the Malayan Archipelago to the north and north-west. The harbour of Port Darwin was visited by King in his survey of the north coast in 1818 to 1822, with whom sailed the now celebrated Dr. Darwin, after whom the Port has been named. It is a splendid, deep, and tranquil harbour, and would, no doubt, if the dredge were used, yield a splendid harvest to the naturalist. There are many reefs in it, which are left uncovered at low water. The coast line is formed of high cliffs, and large masses of broken rocks and immense boulders, alternating with of patches sandy beach—tropical vegetation luxuriantly growing to the water's edge; and in the indented arms it is thickly fringed with the mangrove. The molluscan fauna of this (natural) province are mostly carnivorous, the vegetable feeders being very poorly represented—probably owing to the absence of any large extent of seaweed.

The pearly nautilus is found outside the heads. The genus *Murex* is well represented, including the beautiful *M. monodon;* so also is *Fusus*, by a giant species—probably *F. colosseus* (Lk.); the lovely *Scalaria pretiosa* is also occasionally taken here; and the pearl oyster occurs too, but has not yet been found in large quantity—the specimens taken, however, are very fine. The mangrove swamps are the home of *Cerithium telescopium*, *Pyrazus palustre* and *sulcatum*, *Cerithidea Kieneri*, *Auricula auris-judæ*, *Cassidula angulifera*, a species of *Placuna*, &c. &c.

The following genera occur in Port Darwin:—*Murex*,

Trophon, *Fusus*, *Pugilina*, *Pleurotoma*, *Triton*, *Ranella*, *Buccinum*, *Nassa*, *Purpura*, *Ancillaria*, *Fasciolaria*, *Turbinella*, *Voluta*, *Melo*, *Mitra*, *Columbella*, *Cassis*, *Dolium*, *Natica*, *Ruma* (?), *Scalaria*, *Terebra*, *Solarium*, *Conus*, *Strombus*, *Cypræa*, *Volva*, *Cerithium*, *Vertagus*, *Pyrazus*, *Cerithidea*, *Littorina*, *Planaxis*, *Turritella*, *Vermetus*, *Siliquaria*, *Onustrus*, *Calyptræa*, *Nerita*, *Turbo*, *Trochus*, *Delphinula*, *Polydonta*, *Clanculus*, *Monodonta*, *Euchelus*, *Monilea*, *Stomatia*, *Haliotris*, *Fissurella*, *Emarginula*, *Parmaphorus*, *Dentalium*, *Patella*, *Chiton*, *Pholas*, *Solen*, *Cultellus*, *Saxicava*, *Corbula*, *Anatina*, *Mactra*, *Psammobia*, *Tellina*, *Tellinella*, *Donax*, *Venus*, *Chione*, *Cytherea*, *Circe*, *Cardium*, *Hemicardium*, *Chama*, *Lucina*, *Pythina*, *Cardita*, *Mytilus*, *Modislaria*, *Lithodomus*, *Meleagrina*, *Perna*, *Malleus*, *Pinna*, *Arca*, *Pecten*, *Spondylus*, *Placunanomia*, *Placuna*, *Vulsella*, and *Ostrea*.

The following species are common to Ceylon and Port Darwin :—*Psammobia cærulescens*, *Tellina* (*Phylloda*) *foliacea*, *Cytherea gibbia*, *Venus corbis*, *Cardium rugosum*, *Meleagrina margaritifera* (the pearl oyster), *Pecten pleuronectes*, *Delphinula laciniata*, *Monodonta labis*, *Turbo versicolor*, *Pyrazus palustre*, *Cerithium telescopium*, and *Cypræa tigris*. Three species of land shells are found in the neighbourhood of Port Darwin—*Helix pomum* (Fer.); a brown, horny species of the same type as *H. Grayi*; and *H. pseudo-Meadei* (Brazier), intermediate between *H. Pomum* and *H. Meadei* (*H. Edwardsi*, Cox.), a Queensland species: it differs from *H. pomum* in the surface of the columellar margin, in being stippled like the surface of a thimble—and from *H. Meadei* in colour. The fresh-water species comprise *Paludina*, *Lymnea*, *Physa*, *Cyclas*, and *Unio*.

Altogether the molluscan fauna obtained in the immediate neighbourhood of Port Darwin is of a very interesting character; comprising many shells worthy of our notice from their beautiful and curious forms, and also their rarity in the cabinet of the collector.

ADDITIONAL CHAPTER.

CENTRAL AUSTRALIA.

Mr. J. A. Giles's Paper on Central Australia — Description of Country along Telegraph Line — Pine Creek — Telegraph Stations at Katherine River, Daly Waters, Powell's Creek, Tennant's Creek, Barrow Creek, Alice Springs, Charlotte Waters — The MacDonnell Ranges — Natives along Route—Supply of Water.

SINCE the foregoing was in type, the following interesting and well-written account of Central Australia, along the line of telegraph, has appeared in the *Register*. The writer, Mr. J. A. Giles, is well acquainted with the whole of the country which he describes. It is the best and most trustworthy account of Central Australia which has yet been published, and I gladly transfer it to these pages. It will be seen that Central Australia is by no means the barren desert which it was, and is, supposed to be. There is an immense tract of country, with good feed for cattle, and water to be depended on, over almost the whole of the line. The description of the several telegraph stations is worth reading. With these few prefatory remarks, I now reprint Mr. Giles's interesting and instructive paper:—

"The country from Palmerston to the reefs at Pine Creek has been so often described that repetition would be simply tedious, and as Pine Creek is the last settlement south of Palmerston on the overland route, it will suffice to take that locality as a starting-point. A description of the country, with the waters and distances, may not be only interesting, but of material service to those likely to undertake the journey.

"Starting from Pine Creek, the first water is at 'Stuck-up

Camp,' four miles distant, the road passing through low slate hills, with numerous quartz reefs. The hills are lightly timbered with gum, bloodwood, and other trees, and tolerably well grassed. 'Stuck-up Camp,' so called by the telegraph party, they having been detained there by the wet season, is on the head of the Cullen River. There is a fine hole of permanent water here, and the road to the Cullen Crossing, nine miles off, is through a granite country, with low timbered rises, and broad, open, and well-grassed flats between. There is plenty of permanent water at the crossing, where the river is a deep sandy channel. On the south side open and well-grassed country extends to a distance of eight miles to the Fergusson River. The route is also marked by the same characteristics. The Fergusson is a broad and deep river, running for several months in the year. Plenty of water is to be obtained in the driest seasons, and the surrounding land is good. The stream, after meeting the Cullen about eight miles to the westward, joins the Katherine River, about forty miles further to the south-west. From the Fergusson Crossing to Driffield's Creek, four miles away, the road passes over slate and quartz hills, splendidly grassed and timbered with gums, stringybark, bloodwood, and other trees. The Driffield is a tributary of the Fergusson, with a deep sandy bed, and some good waterholes above the crossing. From here to the Edith River, ten miles on, the road passes through another hilly region of slate, quartz, and ironstone, thickly timbered in places, and well grassed.

"The Edith is a small stream flowing to the west, and running throughout the year. There are fine paper-barks, gums, and palms growing along the banks; the surrounding country being hilly, open, and splendidly grassed, with black-soil flats along the river. The locality is similar for the next four miles to the Phillips Creek, a tributary of the Edith. Here the land changes, becoming very stony, with high broken ranges of slate, quartz, ironstone, and trap rock. This continues for about three miles, and then come very rough broken hills covered with honeycombed boulders of basaltic rock. The road winds through these, ascending gradually for about

three miles to the top of the tableland, from which the country has a gradual fall to the Katherine River, a distance of twenty miles. 'Bay of Biscay' Plains, covered with quartz, ironstone, agate, and flint pebbles, are now met with, and the soil gradually becomes richer towards the Katherine, the hills being capped with immense masses of blue limestone, and here and there are huge isolated rocks of sandstone. The soil is a rich chocolate loam, magnificently grassed and lightly timbered, while nearer the Katherine are flats of rich black soil.

"The Katherine River is, at the crossing, about 500 yards broad, from cliff to cliff, and 90 to 100 feet in depth. The stream itself is, at the driest time of the year, about 150 feet wide, and has an average depth at the fording-place of 2½ feet. This is at the driest time of the year, but during the wet season the water often rises to within a few feet of the tops of the cliffs. From what I know of this river, and from information obtained from others who have lived for some time on it, I am strongly of opinion that it will, when explored, be found navigable, at a moderate flood, to the Telegraph Station. Should it be so, it will save 200 miles of land carriage. The land on either side is magnificent, consisting of rich black loam, chocolate, and brown clay, with lighter soils, all splendidly grassed and timbered. From the Katherine Station the road passes through similar country to that on the northern bank, but with more limestone, which is piled up in the most singular manner, forming pillars, arches, and passages. All this limestone country is full of caves. At 12 miles from the Katherine the road enters a sandy tableland, well grassed, and heavily timbered with gums, bloodwood, ironbark, &c., with here and there belts of large pines. It is about six miles across this tableland, from which the road descends into heavy forest country, well grassed. At four miles the country changes to thick ragged scrub, scantily grassed. The soil is of a light description, covered with small brown ironstone gravel. This extends to the King Creek—three miles. This creek rises in the rough hills to the eastward, and flows to the westward, and is permanently watered. At the crossing the country is poor

and scrubby, but a few miles down the creek are fine open blue-grassed plains, with fine lagoons.

"From this creek to Abraham's Lagoon, a distance of 40 miles, the road passes through alternate patches of good and inferior country, crossing three creeks. The Roper Creek is three miles from the King, the Gum Billabongs 14, and thence to the Stirling the distance is 15 miles. None of these creeks contain permanent water. Abraham's Billabongs are long deep ponds, in heavy paper-bark and gum forests, and are permanent, and well stocked with several kinds of fish, including black cod, catfish, and a small white fish. There is a splendid black soil all along these lagoons. Three miles from here is the Bitter Spring, close to the road, in a small hollow on the banks of the Roper River. An immense volume of water issues from under a ledge of limestone rock, and the water is of a slightly bitter and sweet taste. It is a dangerous place to water stock. The channel is only about three feet wide, and of great depth, with a thick growth of corkscrew palms overhanging. There is a small extent of open well-grassed plains on the west side of the road. To the east, about 200 yards distant, is one of the branches of the Upper Roper, rendered conspicuous by the lofty and dense mass of vegetation growing along the banks, consisting of gigantic paper-barks, gums, corkscrew palms, and in places the tall stately fan palm, which here grows to the height of 60 feet. At Bitter Spring the road branches into two, the left hand track following the river to the Roper Depot, and the Leichardt's Bar, 130 miles, the overland tract turning off to the right, to the Warlock Ponds on the Upper Elsie, 12 miles, through rather sandy and heavy timbered country, well-grassed.

"The Warlock Ponds, in the Elsie Valley, are large deep ponds of permanent water from two to three hundred yards long and from eighty to a hundred yards broad in the dry season. In the wet season, and for a month or two after, the valley is full, and is two hundred yards broad and about three to four feet deep. Some few miles down the Elsie are vast paper-bark swamps, the sources of the Elsie proper, which is a strong

running stream. At the lower crossing on the Roper road the bed is composed of minute white shells of a great depth, and is worse to cross than a quicksand. From the Warlock Ponds the road crosses undulating country for 25 miles to the Birdum Creek, timbered with stringybark, gum, bloodwood, ironbark, and other trees. The Birdum Creek is in a broad shallow valley, rising at Stuart's Swamp and Daly Waters, and running north to the Elsie, a distance of from 95 to 100 miles. There are plenty of fine clay waterholes all the way, but none are permanent. In the wet season the whole valley, which is from half a mile to three or four miles broad, is inundated. It is timbered with box and gutta-percha trees, and covered with a thick growth of blue grass. About 20 miles from the Daly it is covered with wild rice, which grows to the height of seven or eight feet, and bears a grain a little smaller than the common rice, and with a black husk. On either side of the valley the country is undulating, and in some places sandy, with thick clumps of trees and shrubs interlaced with creepers and vines. The ebony tree is first met with here, and towards the Daly dense belts of hedge trees and open forest country well-grassed are met with. The road from the Elsie, after striking the Birdum, follows along the eastern side of the valley for about 70 miles, then crossing it and following the western bank for 20 miles to Daly Waters Telegraph Station, which is situated on the Daly Creek at Stuart's Camp. The station is a strong wooden building of sawn slabs of bloodwood and ironbark, roofed with galvanized iron, and contains officers' quarters, office, store, and kitchen. There is also a large iron store used for the telegraph construction stores. In front of the building is a securely fenced garden well stocked with sweet potatoes, Timor pears, bananas, pine-apples, lettuces, radishes, beans, &c., and a tamarind tree, grown from seed planted in 1872 by Mr. R. C. Burton. It is now about ten feet high. There is also a well-grassed paddock, a mile square, enclosed by a wire fence. The stock at this station consists of horses, cows, sheep, and goats, all of which do remarkably well, and are in splendid condition. The region round the station is open forest, splendidly grassed. A road

goes from here to Leichardt's Bar, on the Roper River. From Daly Waters to Frew's Ironstone Pond, a stretch of 50 miles, the route passes through alternate patches of open forest land, well grassed, and dense hedge-tree and mulga scrubs. The usual halting-places on the journey are McGorrorey's Pond, 14 miles on Auld's Pond, three miles further Millner's Lagoon, another 14 miles then Johnston's Lagoon (12 miles distant), and next on eight miles to Frew's Pond. None of these waters, however, are permanent.

"Frew's Pond is a circular basin, about 300 yards in circumference, with a depth of about twenty feet for a third of the circumference on the west side, where the bank slopes gradually into the water. On the other side are perpendicular walls of conglomerate ironstone. When full, the pond is a fine one, but as the water gets low, it becomes almost undrinkable in consequence of the thousands of divers and cormorants which frequent it. There are some splendid sturdy old box trees growing round, and the ground is covered with a thick short green grass like a carpet, making it one of the prettiest and best camps on the road. To the east the country is scrubby, and to the west and south are open plains of black 'Bay of Biscay,' subject to inundation. The drainage is all to the westward. Four miles from Frew's Pond the road enters Sturt's Plains, crossing it in seventeen miles. To the east the forest runs parallel to the road at a distance of about six miles, but on the west not a tree is to be seen as far as the eye can reach, until the traveller is about halfway over, when a point of forest appears in the distance. This plain is entirely composed of black soil, and during the wet season is completely under water to a depth of a foot, with a very gradual flow to the westward. After the water has drained off, the herbage and grass is most luxuriant.

"The plains having been crossed, belts of hedge tree with fine open stretches of land are met with for seven miles to the north, when the Newcastle Waters are reached. This watercourse rises to the eastward of the Ashburton Range, comes close round to the north end, flows south for thirty-five miles, and finally empties itself into Lake Woods. Along the whole

of its course there are magnificent reaches of permanent water, varying in length from one to two miles and from 100 to 200 yards in breadth, with broad, open, and gently sloping banks covered with a short green grass. There are thousands of pelicans, ducks, geese, and immense numbers of cormorants in the vicinity. The district is also thickly populated with natives, who have always shown a hostile feeling to the whites. They are a fine race, tall and well-made, with faces free from beard or moustache—a peculiarity observable in all the tribes from the north coast to the MacDonnell Ranges. The Ashburton Range runs parallel to the Newcastle the whole way, and is from two to four miles distant from it, the road going between the two, through splendidly grassed country. The range is rough and stony, composed of a hard white sandstone. The camping-places along here are the North Newcastle Reach, thence nine miles to the Express Reach, twelve miles to the South-East Bend, and ten miles to the South Newcastle Reach. From the South Newcastle to the Lawson Creek is six miles. The creek rises in the Ashburton Range, and flows to the west into Lake Woods, which is about two miles from the crossing of the creek. There is no permanent water at the crossing, but about a mile and a half up the creek in the range is a fine spring. There is good land on both sides. From here to the Fergusson Creek, twelve miles off, the route passes over good country, lightly timbered and well grassed, and skirting the foot of the range. The Fergusson is a large deep creek rising in the range, and emptying into Lake Woods. It has some fine waterholes and several springs in the range, and is surrounded by splendidly grassed valleys and flats.

"From the Fergusson Crossing to Powell's Creek Station is fourteen miles, the intermediate territory being patchy. The way leads through the ranges, and a short distance to the westward good land opens out into extensive well-grassed plains. The station on the Powell's Creek is a fine substantial stone building, roofed with galvanized iron. There is a fine spring of good water within fifty yards of the station. On the east and south sides are high rocky hills, with a valley to the

south-east, through which the creek, which is plentifully supplied with permanent water, comes. The stock here consists of horses, cows, and sheep, and they all do well.

"From Powell's Creek to Renner's Springs is nineteen miles, the road for the first seven miles winding through the Powell's Creek Valley. It then ascends a small range, and after four miles crosses the Ringwood Creek, which is the first creek falling to the eastward from the Ringwood to Renner's Springs, a distance of eight miles, mostly through scrub and spinifex.

"Renner's Springs are close to a high pile of rocks, and consist of mounds covered with reeds. There are several fine gum-trees growing round, and on the east is a fine open well-grassed plain with a range of hills beyond, about two miles from the springs. From here for the next forty miles the land is poor, with patches of scrub and spinifex and stony hills. Three creeks are met with, all running to the westward, but without permanent water. The first is the North Tomkinson, sixteen miles from starting-point. The Middle Tomkinson is seven miles on, the South Tomkinson seven miles further, and ten miles from this are Kirchner's Ponds. These are not permanent, but hold water for a long time after rain. The surrounding district is good and well grassed with several different varieties. Permanent water also is obtainable by following the creek to the eastward for about six miles. From these ponds to the Morphett Creek—eight miles—the country is for the first four or five miles very good; but it then becomes scrubby, and in places stony. The Morphett is a very broad gravelly creek running to the eastward, with permanent water obtainable about three miles down it, and with some good land on both sides. From here it is three miles to Attack Creek, the region being open and well grassed to the eastward, with a low, rocky range about a mile on the west side of and parallel to the road. Attack Creek is large, rising in high ranges to the westward, and running to the north-east. There are fine holes of water in it, but they are not permanent.

"From Attack Creek it is forty miles to Tennant's Creek Telegraph Station, the journey winding through stony hills covered with spinifex for the first twenty miles, and crossing

the North Hayward River after eight miles; the South Hayward two miles further, and the Gibson at the end of another five miles. All these creeks flow to the eastward, and have no permanent water near the crossings. The Phillips Creek, five miles from the Gibson, is in better country, and, though not permanent, contains water for several months after rain. There is no water between this and Tennant's Creek, twenty miles away, and the country is scrubby and poor. Tennant's Creek Telegraph Station is another creditably and substantially built stone structure, situated on rising ground about a quarter of a mile on the western bank of the creek, in which, however, there is no permanent water; but a well has been sunk, and a sufficient supply obtained for station purposes. The surrounding district is open, and well grassed along both sides of the creek. There are horses, cows, and sheep here, and all in fine order. About twelve miles down the creek there is splendid country. From the station to Kelly's Well, a thirty-two miles' stage, the way passes through a wretched locality of nearly all scrub and spinifex, and destitute of water close to the road. Near Mount Samuel there is a small patch of good grassed land and a little water, but it is not permanent. Mount Samuel is a high hill with an immense dome-shaped mass of shiny black magnetic iron on the summit, which gives it a most peculiar appearance. At Kelly's Well there is plenty of water to be had by clearing out the sand which washes in after every rain, the well being sunk in the bed of a small creek. The vicinity is well grassed. From here the road passes through fair country to the Gilbert Creek, excepting one or two patches of spinifex, and there is a high range all the way about five miles to the east of the road. The Gilbert, twenty miles from Kelly's Well, is a large sandy creek, rising in the range, where there is permanent water and running to the westward. There is no permanent water at the crossing, but large holes are met with, and these hold water for a long time after rains. The district is good and well grassed on both sides of the creek.

"From here to the Bonney, fourteen miles, the country is tolerably open and well grassed, with one creek, the McLaren,

but it has no water. The Bonney is a very large rocky creek rising in high ranges to the east, and running to the westward. There is no permanent water at the crossing, and the surrounding region is very inferior, being scrubby and covered with spinifex. From the Bonney the route passes up a narrow valley, and after five miles passes the Dickson Creek, a tributary of the Bonney, and passes over a rough stony range, and descends on to the Sutherland Creek, where so many sheep have been poisoned—Mr. Ralph Millner having lost 1500 in 1871, and Mr. Alfred Giles 500 in 1873, and 400 more in 1875. The skeletons are lying all along the road for several miles. From the Sutherland the track crosses a low rocky spur, and also the Wauchope Creek, small and dry, fifteen miles from the Bonney. The next twelve miles are through good land to the Wickliffe Creek, where there are two camping-places—one about two miles west of the telegraph line at a deep clay waterhole, and the other a mile to the east of the line at Thring's Swamp, which is about two miles in circumference. The water is not permanent at either place, and the surrounding country scrubby and inferior. For the next twenty-eight miles, from the Wickliffe to the Taylor, the chief characteristics are scrub and spinifex. The Taylor is a large sandy creek, rising in the Forster Range, which, running in a northerly course for forty miles, gradually trends away to the westward. The route now follows the northern bank of the Taylor for ten miles, and then crosses it and takes the western bank for thirty miles. Some good waterholes are fallen in with, but it is doubtful whether they are permanent. From the Taylor to Barrow Creek, a nine miles' stretch, the traveller passes through good grassed land, with open plains and high ranges to the east, west, and south. Barrow Creek Telegraph Station is situated round the western end of a high cliff-capped range close to its foot, and nearly facing the Forster Range. It is a strong stone building, built in the form of a square, having a square court-yard inside. The only entrance is by a gate at the rear opening into the court-yard, whence doors lead into the officers' rooms, store, kitchen, and men's quarters. There is no permanent surface water, but a well has been sunk, and a plentiful supply of brackish water

has been obtained. For drinking purposes the water has to be carted nine miles from the Taylor. Splendid grassed country surrounds all Barrow Creek. There are horses, cows, and sheep at the station.

"Resuming the journey, the road passes through good land for three or four miles, which, however, gradually becomes hilly, stony, and covered with spinifex. After ten miles the track ascends the western end of the Forster Range, winding up a steep spur. On the summit of the range an extensive view is obtained to the east, south, and west. To the south, at a distance of about thirty miles, is Central Mount Stuart, high and massive looking, and high ranges stretch out to the S.W., W., N., and N.E., some within a few miles of the road, and others a long way off, with open grassy plains and deep green serpentine lines running through them, the latter indicating gum creeks. There are also large patches and belts of the black and sombre-looking mulga spread out like a map before the traveller's eye. From the top of the Forster Range the road descends in spurs about two miles in length, at the foot of which is the Stirling Creek, which the road follows for about eight miles, through a level, open, and splendidly grassed region. After leaving the Stirling, a good-grassed and lightly timbered locality is traversed for twelve miles to the Hanson, a very broad, sandy, gum creek, which rises in the Mount Freeling Ranges, and, running in a northerly course, rounds the eastern end of Central Mount Stuart, and gradually trends to the westward. There is very little surface water in the creek, but abundance can be procured by digging from six inches to a foot in the sand. The route follows the eastern bank of the Hanson for twelve miles, and Central Mount Stuart is then about two miles off on the opposite side. From here to the Tea-tree Well, fourteen miles off, very fair land is traversed. This well is about fifteen or twenty feet deep, with a splendid supply of water. It is surrounded with a good strong fence, and has a large gum trough by it. A lever has been erected for raising water, but the natives pulled it down and threw it into the well, along with a lot of iron telegraph-poles, which they carried from the line, and a lot of rubbish.

"From Tea-tree Well to the Woodforde Creek—twelve

miles—the country is very good, fine, open, short-grassed plains, with here and there a few clumps of trees. The Woodforde is a deep sandy creek rising in the Mount Freeling Ranges, and running to the eastward. There is no surface water at this crossing, and only a small supply obtainable by digging in the sand. The route, after crossing the creek, follows the eastern bank for three miles, crossing again, and then following the west side for nine miles, and re-crosses. Plenty of water is to be got by digging in the sand at this crossing. The locality on both sides of the creek is excellent. The road now leaves the Woodforde and enters a long valley formed by the Mount Freeling Range on the west, and the Mount Boothby Ranges on the east. This valley is about twelve miles through, and water may be obtained by turning off when about nine miles up, and making for Mount Freeling, striking a creek after about half a mile, and following it up into a deep rocky gorge, where there is a plentiful supply of the pure element. The route, before leaving the valley, passes the foot of Mount Boothby—a very high, black-looking, and frightfully rugged elevation. Coming out of the valley, the traveller skirts along the foot of the western range to the Native Well, an irregular-shaped hole about ten feet deep. There is a slight soakage from the bottom of this well, but not more than a few gallons in the twenty-four hours; probably, if it were sunk a few feet, a good supply might be obtained, as it is favourably situated, being in the centre of a gap in a high range running east and west, and through which the road passes. From this point thirty-six miles on to Burt Creek, the district traversed is extremely poor, the first sixteen miles being spinifex and sand, with poplar trees scattered about, and the remaining twenty miles are characterized by thick mulga scrub, but the land is tolerably well grassed. The Burt is a small creek rising in the Strangways Range to the eastward, and emptying out on to open plains; there is no water here, but nevertheless the surrounding region is magnificent, and would do splendidly for sheep, being thickly grassed with short, fine grass, salt and blue bush, and geranium and other herbs.

"From the Burt to Alice Springs Telegraph Station is thirty-six miles, the first six miles being through country

similar to that just described. The next four or five miles are covered with rather scrubby rises; then follow eight miles of open mulga scrub, splendidly grassed, and with plenty of geranium and other herbage, the soil being a rich red loam. The next two miles consist of open and splendidly grassed land, with saltbush and herbage; and here also is the Ten-Mile Creek, the water of which is slightly impregnated with soda. The creek is on the top of the MacDonnell tableland, over 2000 feet above the sea level. From this point the road descends for ten miles to the Alice Springs, winding about in every possible direction through a perfect jumble of granite hillocks, the last descent being down a very steep hill covered with immense granite boulders, with only just room enough for a dray to pass between. From the hilltop a most magnificent view is obtained. Right in front is an immense range stretching to the east and west as far as the eye can reach, having the appearance of an enormous red wall. No animal, excepting the rock wallaby, could scale it. At intervals of several miles there are gorges, through which creeks find their way, but it is only through one or two of these gorges that it is possible to take a dray, and then only when the creeks are dry. After descending this hill, the track, after winding about a little further, reaches the Alice Springs. The station is situated on the western bank of the Todd Creek. On the opposite side is a rocky hill composed of large granite boulders, at the foot of which is a large and deep waterhole. Close behind the building is another high hill of huge boulders, and all round are rocky hills. In front of the station, about half a mile off, are two gaps, through one of which goes the Todd Creek, and the road to Messrs. Bagot and Smith's station through the other, a high rocky hill dividing them. Through these gaps a view of the before-mentioned red range, distant about three miles, is obtained. The station is built on the same principle as that at Barrow Creek. Messrs. Bagot and Smith's property is twelve miles east of the telegraph station on the Jessie Creek. About 200 yards at the back of the station is a high rocky range, in which the Jessie takes its rise, running over ledges of rock and falling into a most remarkable gorge, the mouth of which, close to the station, is

about thirty yards wide, the walls rising up perpendicularly to a great height. On entering the range, the gorge opens out in a circular form with perpendicular cliffs over a hundred feet in height all round. The bottom is filled with enormous boulders. Where the creek comes from seems to be a complete mystery, and it is only by threading your way amongst the rocks right up to the very foot of the cliff at the end of the gorge that the traveller solves the problem by discovering a very narrow passage leading skywards, and down which a nice little stream of clear water is always running. In front of the station, about four miles away, is the red range through a gorge of which the Jessie Creek flows. The gorge referred to is only to be got through by swimming a deep pool of water occupying the whole width of the gorge, and the cliffs rise from the water perpendicularly to a height of 200 feet. Six miles further along the range towards the Alice Springs is another gorge, the Emily, also full of water, but not deeper than about three feet. This is about 300 yards through and about thirty yards wide. The eastern cliff is a solid mass of rock, rising up quite smoothly and perpendicularly for 300 feet. The western wall is the same height, but more broken. Five miles from this along the range is the Heavitree Gorge, through which the Todd Creek runs. This gorge is eighty yards wide, and the creek which occupies the whole width, is dry here, with a smooth bed of white sand. The cliffs are very rough, and rise perpendicularly to the height of 500 feet. The next gap—Temple Bar—is twelve miles away. The Roe Creek, the overland telegraph line, and the road go through it. The creek is dry, and, like the Todd, has a level sandy bed. The cliffs here are not so high, and slightly sloping. The country between this range and the northern one forms the finest grazing land in Australia. The northern range is composed of coarse, grey hornblende, granite, blue slate and trap rock, steatite, and several other rocks; and the southern of a hard, close-grained red and white sandstone, the grains highly crystalline. A complete jumble of low sharp-pointed slate hills make up the intervening district, covered with ironstone, quartz, and mica.

"After passing through Temple Bar, twelve miles from Alice Springs, the traveller turns to the westward, crossing

limestone ranges, and descending into a deep valley about a mile wide, with another high parallel range on the south side. The valley is well grassed, and the route follows it for about eight miles, and then turns through Fenn's Gap in the southern range, entering another parallel valley about a quarter of a mile wide, with a very high rocky range on the south side. The road now tracks this valley for about fourteen miles to the Jay Creek, close under an immense range, the highest points of which are Mount Conway, a stupendous dome-shaped mountain, Brinkley's Bluff to the west, and Mount Charles on the east. It is said that they have been estimated as being over 4000 feet above the sea level. The road, after crossing the Jay Creek, passes over a low hilly region to the Hugh, an immense gum creek rising in the range and flowing to the south. There is abundance of water here. Following along the eastern bank of the Hugh for eight miles—about three miles through a splendid district belonging to Mr. Gilbert—the track crosses over lightly timbered mulga rises, well grassed, for five miles to Messrs. Gilbert and Conway's station, Owen Springs, on the Hugh, at the Waterhouse Range, which is long and composed of dark-red, cross-grained sandstone. The station is pleasantly situated on rising ground, at the foot of the range, close to the gorge which the Hugh passes through. The locality is fine and open to the north-east. From here the road follows the bed of the Hugh through the gorge for about two miles, thence across open country, striking the creek again after five miles, and crossing it, passes through mulga country for ten miles, again reaches the creek at McClure's Springs, in the James Range, and follows it through gorges, crossing it repeatedly for seven miles to Stuart's Waterhole. From here, the route passes over spinifex country for twenty-eight miles to the Long Waterhole, where there is good country. Four miles further on, the track again crosses the Hugh at the Deep Crossing, thence passing through a fine region to Mount Burrell, on the Hugh, fourteen miles distant. This is a fine open hilly district, watered, well grassed, and with plenty of herbage and cotton-bush.

"The next water from here is Percy's Hill, a distance of seventeen miles, on the Hugh, the journey being through the same description of country. From Percy's Hill to the double

crossing of the Hugh—ten miles—the road passes over a miserable sandhill region covered with spinifex in most places. The creek here runs down to the foot of high broken cliffs, under which plenty of water is to be obtained by digging in the sand. Running along the foot of the cliffs for about half a mile the creek suddenly turns, and doubles back, almost on its former course. There being no way round the bend by the cliffs, the track has to cross it twice, and, continuing through high sandhills for twenty-two miles, reaches the B Depot, on the Hugh, near its junction with the Finke River, crossing it here for the last time. The whole course of the Hugh is thickly timbered with splendid gums, from three to four inches in diameter, to several feet, growing to a great height, and perfectly straight. From the B Depot to the Horseshoe Bend, on the Finke River, is twelve miles, the intermediate country consisting of sandhills for the first three or four miles, though the remainder is well grassed open mulga land.

"The Finke at this point is considerably over a mile in width, and the main channel has a clear smooth bed of fine white sand over half a mile wide. There is plenty of surface water, which towards the dry season becomes brackish. The river rises in the northernmost of the MacDonnell Ranges, and runs to the S.E. for 400 miles, passing to the east of the Charlotte Waters Station, about nine miles off, gradually trending to the eastward, and beyond is unexplored. It was supposed that it emptied itself into Lake Eyre. But the explorations of the lake by Mr. Lewis give no clue to the supposition. There must be a much larger lake to the north of Lake Eyre, as there is, besides the Finke, Todd, Roe, and several other streams—all of which are very large gum creeks—the whole of the drainage from the MacDonnell Ranges east of the Alice Springs, and which extends for, as far as is at present known, over a hundred miles.

"From the Horseshoe Bend to the Finke at Mount Musgrave, fifteen miles, the road passes through the mulga forest, well-grassed, and with a few sandhills, for about seven miles, and then comes open grassed country and high-peaked hills to the east, north, and west, the summits covered with gypsum and having a snow-capped appearance. From Mount Musgrave,

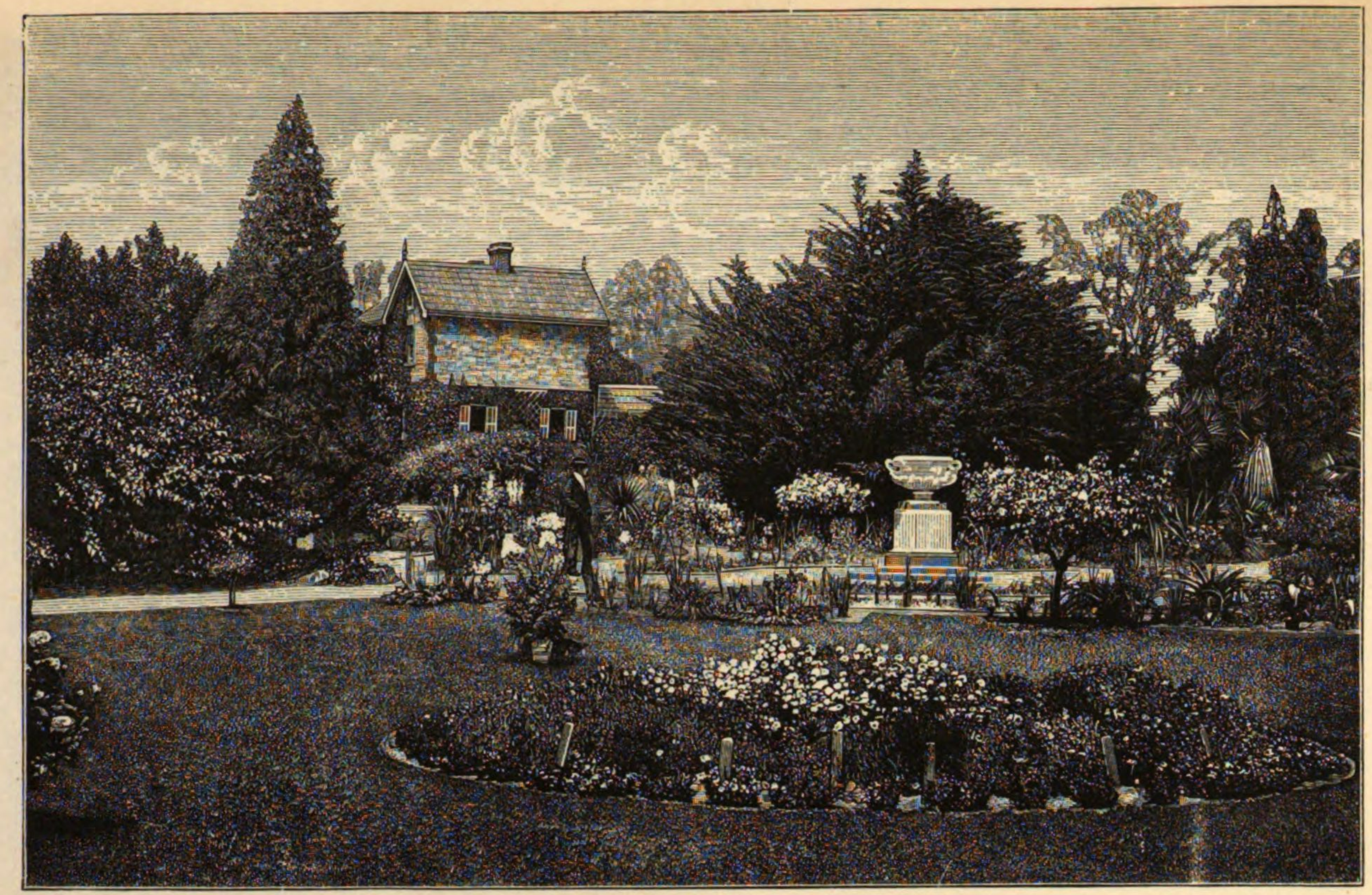
where there is plenty of water, both salt and fresh, the way passes over stony, undulating, well grassed, and open territory to the Finke. Crossing ten miles thence, it goes to the Goyder Creek, thirty miles, through a fairly grassed, hilly, and rather stony region, with here and there patches of mulga scrub. Crossing the Goyder, a large sandy creek running into the Finke from high ranges to the westward, the road for the next thirty miles, to Charlotte Waters Telegraph Station, is characterized by mulga scrub, open plains, sandhills, and stony rises poorly grassed.

"Charlotte Waters Station, situated on the creek of that name, is a fine substantial building of white freestone, and erected on the same plan as the Alice Springs and Barrow Creek Stations. The surrounding country is open, level, and thickly strewn with fragments of brown clinker-looking ironstone and gypsum. From this point 200 miles on to the Peake Station the district is stony, barren, and, with one or two exceptions, the picture of desolation. The redeeming features are the Adminga Creek locality—eighteen miles from Charlotte Waters—and the Macumba Creek, about 102 miles further on, both of which are well grassed; and at the latter there is a horse station belonging to Mr. Gilbert, of Pewsey Vale, from whence to the Peake the country is exceedingly stony. About two miles from and on the south side of the Peake Creek is Messrs. J. and C. M. Bagot's cattle station. All the buildings are substantial stone structures, and situated on the side of a stony range immediately above a cluster of fine springs. Although the country has a stony and barren appearance, the cattle are in excellent condition. From the Peake to Beltana, a distance of 270 miles, the same stony indications are met with. The road passes several mound springs, some of which are thirty or forty feet in height, with a circular basin on the top, from which the water runs in streams to the plain beneath. To the left of the road is Lake Eyre, and on the right, several miles distant, are high bold ranges.

"The MacDonnell Range country, from the James Range to Barrow Creek, 250 miles, is, as far as climate, water, grasses, and herbage are concerned, admirably adapted for sheep, cattle, and horses, but the carriage of stores constitutes a serious

drawback both in regard to price and time. This must form a decided obstacle to the introduction of sheep. Should ever the railway to Port Darwin be started, the whole of this country would be available for pastoral purposes. The climate is much milder than in the Northern runs of South Australia, and the country is infinitely better grassed. With regard to the natives on the overland route, there is this difference observable between them. From the MacDonnell Ranges to the north coast they are hostile and treacherous to the whites. This is especially the case along the Newcastle, where they are very numerous. The men are generally tall and well formed, with faces destitute of beard and whiskers. The women and children are rarely to be seen, and then only by coming upon them unawares. The MacDonnell Ranges tribes are the very opposite to this. The men have long sharp-pointed beards, with the head shaved from the forehead to near the top of the head. Their foreheads are painted jet black with some filthy compound of grease, charcoal, and gum, and they are the most villainous-looking rascals on the whole route. The Finke natives are a much finer looking race, but have the same long pointed beard. All the tribes south of the MacDonnell Ranges are, so far, peaceably disposed towards the whites.

"In conclusion, it may be stated that the foregoing description faithfully represents the country and the waters as they actually are on the route of the Overland Telegraph line in comparatively dry seasons. In ordinary wet seasons there is water in abundance for nine months out of the year; but in many of the places above alluded to it is not permanent, as, for instance, on the Tomkinson Creek and between Daly Waters and Frew's Pond. Water in abundance is often found from one season to the other in Attack Creek and the Phillips. All to east of the line from Charlotte to Daly Waters the region is a *terra incognita*. All the best country appears to be to the eastward, there being more ranges and open country, and it ought to be worth exploring. From Barrow Creek on the west of the line the country is also unexplored, and there must be an extensive lake country west of Lake Woods, as the drainage in that direction is immense."



BOTANICAL GARDENS, ADELAIDE. (*Curator's House.*)

FLORA OF SOUTH AUSTRALIA.

By R. Schomburgk, Phil.Dr., Director,

KNIGHT OF THE IMPERIAL ORDER OF THE CROWN; OF THE ORDER OF MERIT OF PHILIPPE THE MAGNANIMOUS, AND THE ORDER OF THE CROWN OF ITALY; MEM. OF THE IMPERIAL CAROL. LEOPOLD. ACADEMY; HON. MEM. BOT. SOC. MAGDEBURG; COR. MEM. ZOOL. SOC. LONDON; C.M.R.B.S. LOND.; C.M.B.S. EDIN.; C.M.G.S. BERL. AND DRESD.; C.M. SOC. NAT. CHERB. FRANCE; C.M.H.S. BERL. AND FRANK. ON M.; C.M. SOC. PHYS. MEDICA, ERLANGEN; H.M.R.S. N. S. WALES; ETC. ETC.

South Australia does not offer the contrasts and changes in its configuration and climatical condition that are found to exist in the east, north, and west of the vast continent. It is deficient in high wooded mountain chains and deep moist gullies; and, with the exception of the River Murray, has no great rivers, and but few lakes or swamps. The rainy season is of short duration, and its rainfall limited, the average being only 19 to 21 inches during the year. Its climate also, with the exception of the intra-tropical part, is of a more equal character than that of the other parts of Australia. All these characteristics may account for the flora of South Australia being less numerous in genera and species of plants, compared with those of the other parts of Australia.

Throughout its varied zones there is not a greatly marked diversity in the physiognomy of its vegetation, and its exhibits on the greater part of its area are of a similar character. In character the South Australian flora is intermediate between the south-eastern, south-western, and the tropical floras of Australia. The absence of high mountain chains imparts to the country and vegetation a degree of monotony from the absence of the umbrageous forest region.

The most predominant orders of the South Australian flora, like those of the other parts of the Continent, are—*Leguminosæ*, *Myrtaceæ*, *Compositæ*, *Proteaceæ*, *Cruciferæ*, *Rubiaceæ*, and *Gramineæ;* abundant in genera, species, and individuals.

Very singularly circumscribed are the genera and species in area; many are found in one spot alone, and a diversity in soil and locality brings forth other genera and species; the rapid succession of forms and the contrast in this respect between the northern and southern parts being remarkable.

The bark of most of the trees is usually smooth and of a greyish colour, which no doubt is accounted for by the slight atmospheric changes—the contrast not being so sudden and great as in colder climates. Most of the leaves of the trees and shrubs are coriaceous, rigid, and pungent, and of a shining glaucous colour, which is especially perceptible in the orders *Proteaceæ* and *Epacrideæ*. Yellow-coloured flowers are the most predominant.

The preponderance of the two great genera of the Australian flora, viz., *Eucalyptus* and *Acacia*, also prevails over the whole area of South Australia, but with a deficiency in species in comparison with those of the west and east flora. The number of species of *Eucalypts* known at present in Australia is about 134; of these only 30, and of *Acacia*, of which 300 species are described, only 70 appear in South Australia.

The trees of South Australia do not reach so great a height as those in the east, north, and west; the average that our tallest trees, the *Eucalypts*, obtain being from 100 feet to 120 feet, with a stem of from 4 feet to 5 feet in diameter; and such trees are only found in districts favoured by good soil, or on the banks of the rivers; but these heights sink into insignificance compared with those of trees indigenous to Victoria, Tasmania, and Western Australia, where it is stated that *Eucalyptus globulus* reaches 300 feet and *E. collosa*, F. Muell., of Western Australia, 400 feet; but, more astonishing still, that a fallen tree of *E. amygdalina*, Labill., in the Dandenong Mountains, Victoria, measured 420 feet in length.

The presence of different species of trees in South Australia is also limited in comparison to the other parts of Australia. According to Baron von Mueller, the list of trees above 30 feet in height in Australia comprises 950 kinds. Of these 88 are found in South-Western Australia, only 63 in South Australia, 146 in Victoria, 385 in New South Wales, 526 in Queensland,



BOTANICAL GARDENS, ADELAIDE. (*The Lake.*)

212 in North Australia, and 29 in Central Australia. Only the *Eucalypts* furnish South Australia with timber. They are found in all parts over the area of the Colony, and constitute most useful timber-producing trees.

Amongst the eighteen to twenty species of *Eucalypts* appearing in the extra-tropical part of South Australia, there are only four to six kinds which are most valued. These are distinguished by certain colonial names, such as red, white, and blue gum, stringybark, and peppermint, *Eucalyptus rostrata*, Schlecht.; *viminalis*, Labill.; *odorata*, Behr. Their timber is highly valued for building, railway, water, and wheelwright work, as naves, felloes, and spokes, and as posts for fencing and other purposes. The stringybark, *Eucalyptus obliqua*, Lher., is much valued, being the only kind fit for shingles, and, as a free-splitting wood, the best for forming rails; but it is not so durable as the other kinds.

The wood of the *Acacia* tribe is only useful for cabinet-work and turning, for which purpose the blackwood, *Acacia melanoxylon*, R. Br., is very much valued. The wattle of the colonists, *Acacia pycnantha*, Benth., is very valuable, on account of its freely exuding gum, and also for its bark, the latter containing excellent tanning qualities; and both these products form a very important article of export. The wood of the so-called sheaoak, *Casuarina stricta*, Ait., is of an excellent character and used for cabinetwork, turning, and handles for tools.

The tea-trees, a name applied by the colonists to the genera *Melaleuca* and *Leptospermum*, constitute a class of hardwood usually found in low, moist situations, and on the banks of creeks; is valuable on account of its imperishable nature when used underground, or even in water. The timber is remarkably close-grained, extremely hard when dry, very heavy, and generally sound in the heartwood, which is not always the case with other hard-wooded trees.

The pretty mottled wood of the native pines of South Australia, *Frenela robusta*, A. Cunn., and *rhomboidea*, Endl., lack durability, and are mostly used for fencing stuff and fuel. The native cherry, *Exocarpus cupressiformis*, Labill., the honey-

suckle, *Banksia marginata*, Cav., furnish also handsome woods for cabinetwork; and *Myoporum acuminatum*, R. Br., has a white soft timber, extremely tough, forming excellent knees for boats.

A most remarkable fact in South Australian vegetation is the absence of native eatable fruits, of which there are none deserving the name, except a few berry-bearing shrubs belonging to the order of *Epacrideæ* and *Santalaceæ*, *Astroloma*, and *Leucopogon*, the principal species of which, the native currant of the colonists, *Astroloma humifusum*, R. Br., and the so-called native peach, *Fusanus acuminatus*, R. Br., bearing a globular fruit of the size of a small peach, with a succulent epicarp and a hard, bony, much-pitted endocarp, are all South Australia can boast of. There is also a deficiency in eatable root-bearing plants.

A great many genera of plants of other countries which possess valuable and powerful medicinal properties have numerous congeners in the extra-tropical and more especially in the intra-tropical portions of South Australia, of which I will only mention the following orders, viz.—*Euphorbiaceæ*, *Urticeæ*, *Campanulaceæ*, *Solaneæ*, *Apocyneæ*, *Leguminosæ*, *Asclepiadeæ*, *Gentianeæ*, *Scrophularineæ*, &c.; containing numerous genera and species, probably possessing similar valuable properties, which may be considered as so much buried riches hitherto unheeded, and therefore not utilized. Only lately the wonderful febrifugal properties of the *Eucalypts* have been discovered in Europe. The polygonaceous plant, *Muehlenbeckia adpressa*, Meisn., called by the colonists "Native Sarsaparilla," produces the same effects as the true *Smilax Sarsaparilla*, Lin.; and the *Erythræa australis*, R. Br., contains the same bitter as its congener in Europe, *Erythræa Centaurium*, Pers. There are, no doubt, many trees of the orders *Urticeæ* and *Sapindaceæ* containing also that valuable substance caoutchouc, especially the species of *Ficus*, so abundant in the intra-tropical part of South Australia.

The same ignorance prevails also with regard to the fibrous and dye plants. Of the first I will only mention the *Linum marginale*, A. Cunn.; *Hibiscus tiliaceus*, Lin.; the *Crotalaria dissitiflora*, Benth., from the fibres of which the natives pre-

pare their fishing nets and cordage. Several other plants are known to possess the same properties, especially *Pimelea stricta*, Meisn.; *axiflora*, F. Muell.; and *microcephala*, R. Br.

Gum and resin-bearing trees are also abundant. I have already mentioned the valuable gum of the wattle, *Acacia pycnantha*, but there are several more species producing gum, as *Acacia acuminata*, Benth., &c.

The conspicuous plants which greatly contribute to the interesting character of the Australian Flora, the grass trees of the colonists—*Xanthorrhœa quadrangulata*, F. Muell., and *semiplana*, F. Muell., exude a resin, which contains nitro-picric acid, from which a valuable dye may be prepared.

The flora of South Australia provides copious material for the manufacture of the best paper. Not alone a great number of representatives of the *Gramineæ* and *Cyperaceæ*, viz.:—*Dichelagne crinita*, Hof., *Xerotes longifolia*, R. Br., *Cyprus lucidus*, R. Br., *vaginatus*, R. Br., *Scirpus lacustris*, Lin., but also the bark of *Eucalypts*, and the leaves and bark of *Casuarina*, provide splendid material for paper.

Poisonous plants are known, though there are not many in South Australia. One of the most dangerous to the sheep stock is the *Lotus australis*, Andr., which is very generally distributed, and does great injury; but I consider the poisonous principle lies mostly in the seed. The River Darling Pea, *Swainsona Grayana*, Lindl., produces also poisonous effects on the cattle, especially on horses. A *Lobelia*, *L. pratioides*, Benth., fortunately is not frequently seen in South Australia, but it appears more plentiful in Victoria, to the great injury of stock.

Although the injurious weed *Solanum nigrum* is common in most tropical and temperate parts of the globe, I think it has been introduced into Australia with cultivation. *Lawrencia spicata*, Hook., is also considered by the stockholders on the Peninsula injurious to cattle and sheep. But as the plant is eaten by the cattle before seeding without injury, I believe that the rigid, pungent, bracteate leaves with which the flower-spike is densely covered, especially in the upper part, and which, as the seed ripens, become more coriaceous and pungent,

are the dangerous parts of the plants, and these parts, when eaten in quantity, will, no doubt, injure the mucous membrane of the stomach, and produce inflammation. As the uniform character of the order of *Malvaceæ* is that it abounds only in mucilage, and is totally destitute of all unwholesome qualities, it would be very peculiar should this species contain poisonous properties.

A very peculiar phenomenon of the South Australian vegetation is, that most kinds of trees and shrubs, when dying, die from the tops downwards. It is also a remarkable characteristic that by age the common habit of plants is often much changed, which is proved by the fact that during the period of development and subsequently the individual parts of those which are not flowering and fruit-bearing are different. This anomaly, caused by age and time, not only refers to the dimensions of leaves and flowers, but also to their nature.

If we review the several orders of plants of South Australia, we find that the extra-tropical part is characterized by the remarkable absence of several orders, although it is not impossible that by further discoveries in the central part—as this part has as yet been but imperfectly explored—a few representatives of one or the other order may yet be found; but probably the number will not be extensive. The extra-tropical part of South Australia is destitute of the following orders, viz.:—*Simarubeæ*, *Burseraceæ*, *Meliaceæ*, *Salicineæ*, *Celastrineæ*, *Ampelidæ*, *Anacardiaceæ*, *Magnoliaceæ*, *Bixineæ*, *Araliaceæ*, *Malpighiaceæ*, *Guttiferæ*, *Ericaceæ*, *Plumbagineæ*, *Myrsineæ*, *Sapotaceæ*, *Ebenaceæ*, *Styriaceæ*, *Hydrophyllaceæ*, *Gesneriaceæ*, *Saxifrageæ*, *Samydaceæ*, *Elæagneæ*, *Cupuliferæ*, *Piperaceæ*, *Selagineæ*, *Scitamineæ*.

Although the order *Orchideæ* is represented by numerous species of terrestrial ones, there is an entire absence of epiphital *Orchids* in the extra-tropical part. So are also *Cryptogamic* plants extremely rare; even the order *Filices* is poorly represented.

The orders most abundantly distributed over the whole area are:—*Leguminosæ*, *Myrtaceæ*, *Compositæ*, *Chenopodiaceæ*, *Cruciferæ*, *Proteaceæ*, *Goodenoviaceæ*, *Euphorbiaceæ*, *Scrophu-*



BOTANICAL GARDENS, ADELAIDE. (*Large Gum Tree and Native Shrubs.*)

larineæ, *Ficoideæ*, *Boragineæ*, *Labiateæ*, *Amarantaceæ*, *Convolvulaceæ*, *Epacrideæ*, *Urticeæ*, *Orchideæ*, *Amaryllideæ*, *Liliaceæ*, *Restiaceæ*, *Cyperaceæ*, and *Gramineæ*.

Having given a general description of the flora of South Australia, I proceed now to its special peculiarities in the several localities or regions individualized and distinguished by the predominance of one or more families, although the boundary is in no way so sudden as to preclude certain species from spreading over all regions, especially trees, which, at the same time, are equally common in the scrub and grass lands; and also herbaceous plants, a great number of which appear in the grass land, scrub, and forest region.

Notwithstanding the little apparent difference in the formation of its surface soil and climate, the flora of South Australia introduces itself to the observer in its geographical extension by special and peculiar forms of plants in regions. These are the regions of the forest land, scrub land, grass land, and the intra-tropical region.

Forest Land Region.—The region of the forest land in South Australia occupies mostly the mountainous districts, and extending along the base of the mountain chains. The forests have not the fulness and lofty growth of those of other countries. The underwood is of a medium size, more open and less difficult to penetrate; the forests are of less extent, and are intercepted by tracts of grass land. The *Eucalypts* are the most predominant forest trees—the stringybark forming often whole forests in some mountainous districts, but seldom seen on the plains. *Eucalyptus paniculata*, Sw.; *viminalis*, Labill.; *rostrata*, Schlecht.; *odorata*, Behr., are the most prevalent species.

The trees of the forest do not appear crowded, and seldom do the branches of a tree reach those of a neighbouring one. The declivities of the mountain ranges are for the most part similarly timbered, the trees sometimes extending to the summits, often only half or two-thirds of the remaining part being grassed, here and there with copses of low-growing shrubs, and stunted and much ramified trees; often the whole declivities are grassed without even a shrub or tree.

Another feature of the tableland in the hilly districts is the appearance of occasional hills, clothed only with a scanty covering of tussocky grasses, among fragments of ironstone, quartz, and sand, destitute of all other vegetation, except small scattered trees of the *Casuarina stricta*, Ait., and *glauca*, Sieb., and the peppermint, *Eucalyptus odorata*, Behr.

The level tableland is generally covered with grass, but deficient in shrubs. Here, scattered, are to be seen the most stately and majestic trees of *Eucalypts;* such tablelands appearing more like a park—the trees standing seemingly at measured distances, single or in small clumps, as if planted by the hands of a landscape gardener. The soil of such tableland is generally speaking very rich, and produces abundant crops of cereals. The underwood of the forests is mostly represented by the following genera, viz., *Correa, Alyxia, Prostranthera, Grevillea, Hakea, Isopogon, Exocarpus, Acacia, Banksia, Cassia, Calythrix, Pommaderis, Leucopogon, Leptospermum, Daviesia, Dillwynia, Eutaxia, Platylobium, Pultenæa*, and shrubby *Eucalypts*.

The beautiful genus *Epacris*, which is only represented in South Australia by one species, *E. impressa*, Labill., frequently covers whole mountain ridges and declivities; when in bloom, the different shades of colour of its flowers produce an effect not easily described.

The most prominent and striking effect of the mountain forest region is produced by the grass trees, *Xanthorrhœa quadrangulata*, F. Muell.; and *semiplana*, F. Muell. These plants have a peculiar grotesque appearance of a type unknown in other countries, at once arresting every traveller's attention by their strangeness.

They appear mostly on the ridges and declivities of rocky and stony hills, almost devoid of any other vegetation, and are also found on some wooded lands, but never on the plains. *Xanthorrhœa quadrangulata* grows from 10 to 12 feet high, often with a trunk about one foot or eighteen inches in diameter, and the flower stalk from 6 to 10 feet high. Sometimes specimens are found repeatedly branched in a dichotomous manner, all the branches of equal thickness, which gives them a most



BOTANICAL GARDENS, ADELAIDE. (*Lake Scene, Centre Fountain in Distance.*)

grotesque appearance. This species appears only in hilly districts on the most rocky declivities; they drive their straggling roots into the crevices of the rocks several feet down amongst the accumulated vegetable soil. The grass trees are of slow growth; the largest specimens must be several hundred years old. The second species, *Xanthorrhœa semiplana*, is often found at the base of the hills in sandy soil; it forms its stem underground, which extends often two to three feet before the few straggling roots appear, and the leaves lie close on the ground. This species is also of an ornamental character. The valuable brownish yellow, resinous exudation of the root and lower part of the stem, I have already mentioned.

The deep gullies formed by the ridges and hills, in which the dew most frequently supplies the place of rain during the dry season, are covered with shrubs and ferns. The soil is generally formed of black or sandy peat of a very humid nature, being watered by streamlets running throughout the year, and forming, in some rocky situations, picturesque cascades. In such gullies are associated the most delicate and beautiful plants the flora of South Australia produces. Only in such places do we find assembled the handsomest ferns in great profusion, the stately *Todea africana*, Willd., with trunks often 5 feet to 6 feet in circumference, often forming impenetrable thickets along the rocky banks of the streamlets; *Gleichenia microphylla*, R. Br., thriving luxuriantly in the crevices of the rocks; with the elegant *Adiantum æthiopicum*, Lin., *Botrychium ternatum*, Swartz, *Lomaria discolor*, Willd., and *capensis*, Willd., *Aspidium molle*, Sw., *Grammitis leptophylla*, Swartz, and *rutifolia*, R. Br., interspersed with the lovely *Viola betonicæfolia*, Sw., and *hederacea*, Labill., which border the water edges; and the blue flowers of *Cæsia* and white of *Burchardia* give a great charm to such waterfalls not easily described.

The declivities of the gullies are mostly taken possession of by the luxuriant-growing *Pteris esculenta*, Forst., massed together and forming often impenetrable thickets, while the graceful *Cheilanthes tenuifolia*, Swartz, is generally found in the grass land at the base of the hills, extending even a short

distance into the plains. There also grow magnificent trees of *Eucalypts.*

In such gullies, with their fertile soil and cool clime, the greatest part of our culinary vegetables are grown for the market to a degree of perfection unknown elsewhere, and uninterruptedly supplied throughout the year. Not vegetables alone, but fruits, viz.:—Gooseberries, strawberries, raspberries and currants, &c., are raised in the same perfection.

At the base, and also extending further up on the slopes of the hills generally, in spots least covered with underwood, appear the various and beautiful terrestrial *Orchids,* with their delicate and quaint flowers, together with other monocotyledonous plants, viz.:—*Patersonia longiscapa,* Sweet, *Hypoxis glabella,* R. Br., *Cæsia parviflora,* R. Br., *Arthropodium laxum,* R. Br.

The most conspicuous *Orchids* are:—*Glossodia major,* R. Br., *Caladenia Patersoni,* R. Br., *latifolia,* R. Br., *carnea,* R. Br., *Cyrtostylis reniformis,* R. Br., *Pterostylis cucullata,* R. Br., *reflexa,* R. Br., *barbata,* Lindl., *longifolia,* R. Br., *Thelymitra aristata,* R. Br., *carnea,* R. Br., *Diuris palustris,* Lindl., *maculata,* Sm., *longifolia,* R. Br. The genus *Pterostylis* is represented by numerous species. This aspect of the forest region applies to the Barossa Range, the most prominent near the coast. Other mountain ranges in the far north may present different features.

The Scrub Land Region.—The regions of the so-called scrub land appear over the whole area of South Australia, extending more or less in the different district; but more so in the north and east, occupying about one-eighth of the whole area of the Colony. They form long stretches of desolate arid plains—the soil being of the poorest description, and unfit for cultivation, changing from loamy clay to pure sand; the surface is covered with fragments of silicious rock, ferruginous sand, and ironstone; of water in these tracts there is no indication. The vegetation is of a stunted character, and the scrub is nearly destitute of grasses and other herbage; the few genera of the first are mostly *Neurachne, Stipa, Isolepsis, Spinifex,* the well-known kangaroo grass, *Anthistiria ciliata,*

and a few *Juncaceæ*, viz., *Xerotes glauca*, R. Br., and *filiformis*, R. Br.; and these grow only in tufts, considerably apart from each other. The absence of other herbage is as great during the summer; but this almost entire deficiency is compensated by an endless variety of genera and species of shrubs. The general impression given by the scrub is dismal, although the great variety of shrubby plants associated there makes it highly interesting to the botanist. These shrubs reach generally the height of four to six feet, interspersed with stunted and ramified trees of the genera *Casuarina*, *Eucalyptus*, *Santalum*, *Melaleuca*, *Exocarpus*, *Camphoromyrtus*, *Dodonæa*, *Frenela*, *Banksia*, &c. Smaller shrubs of the genera *Pimelea*, *Leucopogon*, *Dillwynia*, *Hibbertia*, *Acrotriche*, *Calythrix*, cover the ground, and are overtopped by higher growing ones, such as *Hakea*, *Logania*, *Alyxia*, *Myoporum*, *Stenochilus*, *Euphrasia*, *Thomasia*, *Bursaria*, *Pomaderris*, *Haloragis*, *Melaleuca*, *Leptospermum*, *Eutaxia*, *Acacia*, *Isopogon*, *Correa*, *Rhagodia*, &c., forming sometimes impenetrable thickets; in other localities the scrub consists only of *Eucalyptus dumosa*, A. Cunn.; sometimes formed by other bushy *Eucalypts*, viz., *Eucalyptus uncinata*, Turcz.; *bicolor*, A. Cunn.; and *incrassata*, Labill., growing only six to eight feet high, and extending hundreds of miles.

The most predominant colour of the leaves of the scrub is a glaucous green, interspersed here and there with whitish leaves of the *Rhagodia* and other shrubs, having reddish brown leaves. Most of the leaves are ovate, entire, coriaceous, and pungent; shrubs with pinnated leaves are seldom met with.

The monotonous and dismal look of an extensive scrub is depressing, especially when viewed from an eminence. The equal height of the vegetation, the dull glaucous colour of the foliage, look in the distance like a rolling sea reaching the horizon—at least the first sight of the Murray scrub, extending hundreds of miles, produced this impression on my mind. Everyone avoids the scrub as much as possible—many have lost their way there and perished for want of water.

All the scrubs in the different districts produce the same common impression, but the plants comprising them are not

the same genera and species, locality and soil affecting the character of the flora.

Shrubs of one kind or another are found in flower in the scrub throughout the year. Most kinds produce their flowers in September and October, the rainy season therefore alters the physiognomy of the scrub very little; but it calls into life numerous terrestrial orchids, of which a good many kinds inhabit the scrub, viz.:—*Erochilus*, *Caladenia*, *Diuris*, *Prasso-phyllum*, *Dipodium*, *Microtis*, *Cyrtostylis*, &c. These appear with some perennial and annual plants, viz.:—*Helichrysum*, *Drosera*, *Helipterum*, *Scævola*, *Brunonia*, *Thysonanthus*, *Euphra-sia*, *Goodenia*, *Hypoxis*, *Senecio*, &c., and annual grasses; but their duration is short, as with the setting in of the dry season they disappear as rapidly as they appeared.

A most valuable scrub plant, at least for the pastoral community, and appearing copious in the northern districts, is the so-called salt bush, *Atriplex nummularia*, R. Br., on which during the summer and in times of drought the sheep subsist. If all other vegetation is suffering from the drought, the salt bush alone withstands the intense heat of the sun and maintains it freshness, and saves thousands of sheep from starvation.

The Grass Land Region.—The so-called grass land forms the principal part over the whole area of South Australia, consisting in endless undulating plains, stretching from the coast towards the north and east. Along the coast and hundreds of miles inland the grass plains have mostly disappeared, and now form agricultural districts producing the finest cereals known—the soil varying from the best to some indifferently good.

But the grass plains of the interior, especially towards the north, so extensive as to be lost in the horizon, are like deserts, emphatically monotonous and desolate. Only here and there will be found some fertile spots of grass land, but not of large extent, alternating with bare sandstone ridges or rolling sandhills, interspersed with gravelly and waterless flats. Their surface is often saline, covered with sharp angular or weatherworn fragments of various sizes of ironstone, quartz, reddish-coloured sandstone, and conglomerate, supporting only

a scanty herbage of *Atriplex*, *Kochia*, *Salicornia*, and *Salsola*, *Spinifex* and other perennial grasses, growing in tufts, tinging the sandy surface. Groups of stunted shrubs and small ramified trees, sometimes of a limited extent, rise from the plains like islands of the ocean. They mostly consist of the sheaoak, *Casuarina stricta*, Ait., *glauca*, Sieb., and *distyla*, Vent., *Eucalyptus odorata*, Behr., *dumosa*, A. Cunn., *virgata*, Sieb., wattle, *Acacia pycnantha*. The plains near the coast are of a different character, the soil mostly fertile, extending often to the sea, and constituting a great part of our arable land.

The stratum of humus or fertile soil covering these plains occasions also an essential alteration in their vegetation. The grasses consist of more nourishing kinds, viz.:—*Poa*, *Panicum*, *Festuca*, *Agrostis*, *Airia*, *Andropogon*, *Cynodon*, *Stipa*, *Pennisetum*, *Bromus*, *Eriachne*, *Anthistiria*, *Hordeum*, &c. Here appear also a great number of low-growing shrubs, such as *Bursera*, *Grevillea*, and small ramified trees of peppermint, *Myoporum*, *Pittosporum*, *Casuarina*, and *Acacia*, either single, or sometimes forming groves, without underwood, like oases in the desert. The banks of the rivers and creeks, which mostly cease running during the summer, are lined with majestic gum trees, often of immense dimensions, and shrubs extending more or less upon the plains, according to the nature of the soil. This vegetation, on both sides of the rivers, appears like green ribbons, following their curves; these banks have their peculiar flora; here appears *Viminaria*, *Leptospermum*, *Melaleuca*, *Myoporum*, *Hardenbergia*, &c.; herbaceous plants, *Sium*, *Mimulus*, *Myriogyne*, *Senecio*, *Lobelia*, *Petroselinum*, *Eryngium*, *Lotus*, and the following *Juncaceae* and *Gramineae*—*Juncus*, *Luzula*, *Xerotes*, *Neurachne*, *Deyeuxia*, *Stipa*, &c.

The grass land, in fact the whole configuration of the plains, has a great similarity to the Savannas of British Guiana—naturally there is a great discrepancy with regard to the two vegetations; but the Savannas have mostly the undulating ground, the scattered ramified trees, the oases, the rivers lined with a green belt; and the appearance of the grasses and herbage covering the area, has, during the dry season, the same sunburnt yellow character, and is destitute of

all green herbage. After the setting in of the rainy season, there is the same magic appearance of the grasses and herbage.

In the month of May the rainy season generally commences, which has a magical effect upon the herbage of the plains; a few heavy showers change the aspect of the dried-up grasses and herbage into a green and beautiful carpet.

The rapidity with which especially the annual grasses spring up is such that in a few days the plains appear clothed with luxuriant verdure, which only northern countries ordinarily produce. With the grass are also recalled to new life the yellow flowers of *Ranunculus aquatilis*, Lin.; *lappaceus*, Sm.; *rivularis*, Banks; *Oxalis cognata*, Steud.; *Hypoxis glabella*, R. Br.; with the white flowers of *Drosera rosulata*, Lehm.; the blue of the *Wahlenbergia gracilis*, Dec.; *Anguillaria biglandulosa*, R. Br.; *Stackhousia obtusa*, Lindl., with its perfume-spreading flowers.

Every week adds new colours to the beautiful carpet. The scarlet flowers of *Kennedya prostrata*, the violet ones of *Swainsona procumbens*, F. Muell.; and *lessertifolia*, Dec.; the delicate flowers of *Thysanotus Patersoni* climbing up the dry grass stalks, or overrunning small shrubs. The flowers of the isolated trees or copses of the wattles soon glitter in their yellow clothing. The *Loranthus Exocarpi*, Behr., and *Miqueli*, Lehm., growing parasitical of the *Casuarinas* and *Eucalyptus odorata*, adorned with their red flowers hanging in the air. The small shrubs of *Bursera spinosa* are covered with their white flowers, mingled with the red of different shrubby *Grevilleas*, *Compositæ*, are seen blooming over the plains in all colours; and every week brings new representatives of floral beauty.

But by the middle of November the number of flowering plants already lessens considerably, the annual grasses and other herbaceous plants begin to dry up, droop, and disappear, and in January the grass land resembles a ripe thinly sown cornfield, and we find only solitary shrubs covered with a few flowers or a few plants of *Convolvulus erubescens*, *Lobelia gibbosa*, Labill., the latter with their leafless and fleshy stalks, and



BOTANICAL GARDENS, ADELAIDE. (*Cockatoo House and Lake.*)

Mesembryanthemum australe, Soland. In some localities this period appears earlier or later.

The seeds of the annual plants have been scattered, perennial herbage returned to its dormant state, to awake to new life at the setting in of the following rainy seasons; and the plains have during the summer months a dismal dried up appearance.

There is another kind of grass land, appearing here and there in large tracts called "Bay of Biscay land." Such tracts have a peculiar, undulating surface, and look like a waving sea which has suddenly become motionless. The soil is considered very good, of a chocolate colour and produces fine wheat crops, but it must be ploughed several years before the surface becomes level.

The flora of the Bay of Biscay land too has its peculiarity; the Eucalypts shunning such tracts, which, however, are rich in *Compositæ* and grasses, but poor in *Monocotyledons*.

The sea beach is mostly bordered with a belt of arborescent shrubs and small trees of ramified growth, viz.:—*Melaleuca Preissiana*, Schau, *decussata*, R. Br., *Alyxia*, shrubby *Eucalypts*, *Myoporum*, *Pittosporum*, and *Santalum*, interrupted with a thick belt of *Avicennia officinalis*, Lin., extending along the coast. The sandy, often saline, tracts stretching towards the plains are covered with *Atriplex*, *Tetragona*, *Aster*, *Apium*, *Euphrasia*, *Zygophyllum*, *Nitraria*, *Erigeron*, *Cotula*, *Podolepis*, *Erodium*, *Helichrysum*, *Leptorhynchus*, *Dianella*, *Arthropodium*, *Salsola*, and *Mesembryanthemum*, which are often supplanted by tracts of *Spinifex*, *Xerodes*, *Juncus*, *Anthistiria*, *Lepidosperma*, *Isolepis*, *Chætospora*, *Cladium*, and *Carex*.

Intra-tropical Region.—According to G. W. Goyder, Esq., Surveyor-General, the country, especially near the coast of the intra-tropical part of South Australia, consists principally of tableland of from 60 to 150 feet above the level of the sea, falling thence gently towards the sea, although forming here and there into cliffs, which are fringed with dense thickets of various sized timber, matted together with bamboo, and a variety of climbing plants and shrubs. The low lands near the sea, especially such as are under the influence of the

tide, are covered with dense mangroves, *Avicennia officinalis*, Lin., and *Rhizophora mucronata*, Lam. These, as the land ascends to a higher level, give place to palms, *Pandanus*, *Melaleucas*, *Leptospermums*, *Grevilleas*, *Eucalypts*, and *Acacias*, forming an open forest. Amongst the underwood are found ferns, *Aroids*, as *Amorphophallus campanulatus*, Dec., and *Taccaceæ*, *Tacca pinnatifida*, Lin.

The grass over the whole, or nearly the whole, of the surface of the ground, grows luxuriantly, of which the most prominent genera are the following:—*Fuirena*, *Cyprus*, *Eleocharis*, *Cimbopogon*, *Fimbristylis*, *Panicum*, *Setaria*, *Sporobolus*, *Anthistiria*, *Eriachne*, &c. The soil is mostly good, and of a dark brown colour, with small nodules of ferruginous sandstone upon the surface.

Near the sea, and generally upon a watercourse near its junction with the sea, swampy flats occur, containing timber of large growth and rank vegetation. The lakes and waterpools are covered with waterlilies, *Nymphæa gigantea* and *Nelumbium speciosum*, Willd., showing their beautiful flowers in various shades of blue, pink, or crimson. The flats on either side of large rivers also contain good soil, except where they join the higher land, where there is a belt of sandy character, poor to look at, though covered with timber and grass. The same kind of open forest, undulating and flat land, exists over the area, sometimes the soil changing suddenly from a dark brown to a very light loam, the soil improving and the vegetation along the rivers becoming luxuriant.

Judging from the plants collected by Mr. Schultz, who was employed for about two years there as a naturalist, during which time he obtained about 700 species of plants, the intra-tropical flora of South Australia does not present the luxuriant growth and umbrageous foliage we are used to see in other tropical floras. The number of species is also very small, owing, no doubt, to the dryness of the climate; and from the same cause it is deficient in *Epiphytal Orchids*, palms and ferns. *Acacias*, *Eucalypts*, *Ficus*, *Bombax*, *Cupania*, *Terminalea*, *Psychotria*, *Grevillea*, form the prevailing timber trees, and line the rivers; but the *Eucalypts* and *Acacias* do not reach the gigantic

size of their brethren in the extra-tropical region. The following orders are well represented, viz. :—*Euphorbiaceæ*, *Compositæ*, *Convolvulaceæ*, *Rubiaceæ*, *Goodenoviaceæ*, *Leguminosæ*, *Urticeæ*.

The representatives of the intra-tropical flora of South Australia seem to extend towards the east, as a great number of genera and species reach to the Gulf of Carpentaria, and even further. A great many species of the Indian flora appear along the coast of the intra-tropical part, viz. :—*Strychnos*, *Tamarindus*, the Cajuput tree, *Melaleuca leucadendron*, appear abundant along the banks of the rivers, and even over the dry sandstone tableland, but of less luxuriant growth.

The Naturalized Plants of South Australia.—It is an historical fact that whenever man settles in a new country, he not only carries the weeds that are most troublesome in cultivated ground along with him, but he also exercises a potent influence over the indigenous vegetation, especially when he engages in agricultural and pastoral pursuits. The plough, the axe, the flocks and herds, are enemies to existing vegetation; and as cultivation advances one representative after another succumbs to the foreign influence. But the plough, axe, and herds are not the sole destroyers of the native herbage, for with cultivation are introduced noxious weeds, and the new comers, finding a suitable soil and climate, spread with alarming rapidity, and become possessors of the ground—ejecting the native plants, or taking their places by them as if they were truly indigenous.

In proof of this I will only mention the names of a few of such intruders, not only upon cultivated ground, but also over the uncultivated districts, to the great injury of the native herbage, viz. :—The Cockspur, *Centaurea melitensis*, Lin.; the Scotch thistle, *Carduus Marianus*, Lin., and *Onopordon Acanthium*, Lin.; the Cape Dandelion, *Cryptostemma calendulacea*, R. Br.; the Bathurst burr, *Xanthium spinosum*, Lin.; the French catchfly, *Silene gallica*, Lin.; the Stink Aster, *Anthemis Cotula*, Lin.; the so-called sheepweed, *Lithospermum davuricum*, Lehm.; and *arvense*, Lin., which already cover large tracts of pasture land, and will extend further and further, to the destruction of the native herbage. Legislation has not succeeded, notwith-

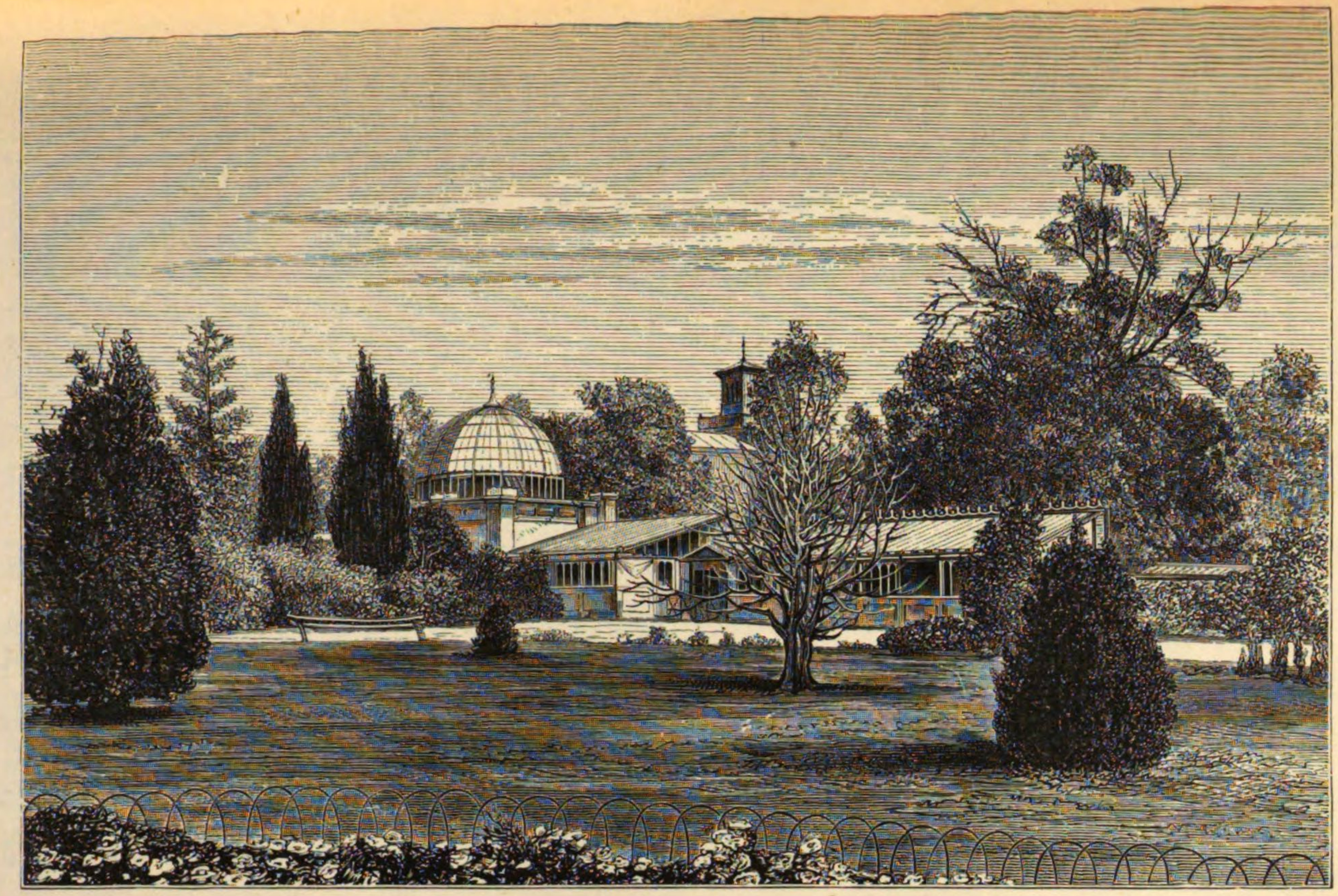
standing large sums have been expended, in extirpating the two most injurious intruders, viz., the Scotch thistle and the Bathurst burr, and it remains to be seen whether the altered circumstances, which seem to be so favourable to their growth, will prove permanent, or, by an over-stimulation, a change will be gradually effected in the constitution of the intruders, bringing about degeneracy and subsequent extinction.

It will not be uninteresting to give here a list of the more troublesome weeds naturalized in South Australia, in addition to those already mentioned:—

Lepidium ruderale, Lin.
Capsella Bursa-pastoris, Lin.
Atriplex patula, Lin.
Urtica urens, Lin.
Polygonum aviculare, Lin.
Cnicus lanceolatus, Lin.
arvensis, Hoffm.
palustris, Willd.
Cynara Scolymus, Lin.
Anagallis arvensis, Lin.
Gnaphalium luteo-album, Lin.
Cerastium vulgatum, Lin.
Fumaria officinalis, Lin.
Raphanus Raphanistrum, Lin.
Stellaria media, Lin.
Lythrum hyssopifolium, Lin.
Portulaca oleracea, Lin.
Fœniculum vulgare, Lin.
Sonchus asper, Vill.
Solanum nigrum, Lin.
Cirsium lanceolatum, Scop.
arvense, Scop.

A good many grasses from other countries, especially European, have become domiciled in South Australia, which have improved the pasture near the coast materially.

The South Australian cereals are considered to be the finest grown in the world; and it is a fact that, with the exception of the intra-tropical, all fruits from other parts of the globe thrive most luxuriantly in South Australia, and come to a perfection, in size and flavour, in the different localities of the Colony, hardly known in other countries; and most fruits, vegetables, and useful plants are found to improve materially by the change, as the climatic conditions often succeed in modifying and improving their condition. The finest grapes are grown on the plains; here they ripen to great perfection, and the South Australian wine must soon obtain a high character in the foreign markets. On the plains also grow apricots, peaches, nectarines, oranges, citrons, lemons, and shaddocks, plums, cherries, figs, almonds, mulberries, olives, &c.; while in the hills and gullies are grown strawberries, raspberries, currants, walnuts, chestnuts, filberts, &c., of the best quality. In such gullies are also raised the



BOTANICAL GARDENS, ADELAIDE. (*The Left Conservatory.*)

finest vegetables and other culinary herbs, at all seasons, in great abundance, as also on the plains during the rainy season; cauliflowers, often two feet in diameter, are not seldom seen; cabbage, turnips, asparagus, artichoke, leeks, onions, beet, carrots, potatoes, endive, lettuce, radish, celery, &c.; cucumbers, the luscious fruits of the sweet and water melon, pumpkins, &c., growing to a flavour and size which at home would be considered as an exaggeration when described.

The advancement in the taste for horticulture and floriculture in South Australia is most praiseworthy and on the increase, as proved by the many tasteful gardens which are now seen, not only in town, but in the environs and country; therefore the importation and acclimatization of the most choice foreign plants, especially florists' flowers, is marvellous, and most of these newcomers improve so in size and the perfection of their flowers as to astonish any European gardener. At the Botanic Gardens are cultivated about 5000 outdoor plants, mostly from all parts of the world.

The Alpine plants will not prosper in the gardens of the plains, but find a genial clime in the hills and gullies (from about 1000 feet to 2000 feet above the level of the sea), where we find the camellias, azaleas, rhododendrons, and other Alpine plants in great profusion. In such situations thrive also our northern forest trees, oaks, beeches, birch, abies, &c.; while the elms, ash, poplars, Robinias, &c., luxuriate in the plains. In the same localities the Californian pines, cypresses, and some of the European pines thrive, but the Himalayan and several of the European pines succeed only in the hills.

[*The observations contained in the following pages have been extracted from papers read by me before the Chamber of Manufactures, in Adelaide, with the object of giving greater publicity to several undeveloped resources of South Australia.*]

The following vegetable productions, although not yet forming articles of export, or of much colonial consumption, might be raised with advantage by immigrants who may not be in possession of large capital. The lands, especially the gullies in the hilly districts, are adapted for many other

branches of agriculture than the all-engrossing object—the cultivation of cereals—and from amongst those mentioned the less wealthy cultivator can make his selection.

SERICULTURE.—The importance of introducing sericulture into South Australia is undeniable, as we have clear evidence of the adaptability of our climate to the production of an excellent quality of silk, for which the demand is now unlimited, in consequence of the disease amongst the silkworms prevailing in the silk-producing countries in Europe, which is unknown here. Considering how silk manufacture has increased for centuries, and still continues to do so, the demand can never fail. For many years, with all my energy, I have advocated sericulture as a paying industry, and advised the extensive planting of the mulberry. To facilitate the scheme, I made inquiries in Europe as to what kind of mulberry was now considered the best for feeding the silkworm, and introduced the seeds, and offered for distribution the young plants of the most approved kinds; but I am sorry to say the demand for these was very limited, and I hailed with delight the judicious act of the Government in providing the means for laying out the first mulberry plantation in South Australia at the Magill Orphanage, where my surplus stock could be used. The object aimed at in this scheme will prove in future most advantageous to that establishment. There is no doubt that the production of silk will become one of our most important industries, which will at the same time be a practical and useful aid to the ordinary occupation of our farmers. As the silk manufacturers now prefer the cocoons to the reeled silk, this will save a good deal of the tedious work of sericulture. Many will say I am too sanguine in regard to the result of sericulture in South Australia, but I think I see my way clearly; and I am more and more convinced by the favourable letter Mr. G. Francis received some time ago from the Silk Supply Association, London. This gentleman had sent different cocoons of his raising to that body to test their value, and received the gratifying news that they were worth from 3*s.* to 5*s.* 6*d.* per pound. If we consider that 6*s.* per pound is the highest price obtainable for the best cocoons in



BOTANICAL GARDENS, ADELAIDE. (*The Rose Garden.*)

England, is not 5*s.* 6*d.* per pound a most encouraging fact in regard to the quality of the South Australian cocoons? I am informed by another gentleman, an enthusiastic sericulturist, Mr. Wurm, that by receiving 6*s.* per pound cocoons would pay well. In regard to the growth of the mulberry throughout the Colony, I may say it grows everywhere. We find the trees growing at Glenelg and Brighton, close to the beach in sand, as luxuriant even as in the hills or elsewhere. In Italy, as I understand, sericulture is divided into three different branches—namely, the growing and selling of the mulberry leaves, the rearing of the cocoons, and the reeling of the silk; and, in comparison with the work employed, one pays as well as the other. But it is not my intention to give a scientific description of the manufacture of silk, or the culture of the mulberry; and, in order not to trespass too much, I will not go into the dry details of figures as to the enormous amount of money which is spent in producing silk, but will only call your attention to the extraordinary fact that the sum paid for silkworm eggs from China and Japan is about £100,000 yearly. Although I feel aware that in giving bonuses great caution must be exercised, yet I feel confident that a bonus for the first half ton of cocoons, in four bales of 250 lbs. each, would be worth the consideration of our Parliament. I have mentioned half a ton, feeling that, limited to a smaller quantity, it might only lead people to cultivate for the bonus, without an earnest desire to promote the industry. I am expecting by every mail a quantity of mulberry seeds, and probably, next season, will be prepared to distribute a number of plants. This, I find, is a good plan to lay the basis of new industries. There are many people who shrink from the trouble of procuring seed and raising the plants, but if they can get trees, they will plant them. I may also mention here that, after many trials of different kinds of mulberries for the food of the silkworm in the silk-producing countries have been made, the white mulberry (*Morus alba*) is now considered the best; but a variety (*Morus multicaulis*) is used for the young worms, it beginning to leaf four weeks earlier than

Morus alba, and this kind should not be omitted in any mulberry plantation.

FLAX AND HEMP.—We may say, with gratification, that the energetic and enterprising farmers in the South have laid the basis of a new and probably remunerative industry—that of flax-growing. If we consider the unfavourable season the flax-growers had to contend with, the first result is in every way most encouraging; and I hope, for the well-doing of the Colony, that other districts will follow the example, as there is no doubt that flax will grow in most of our districts, and yield a fair return. I would also call the attention of the farmers to the growth of the hemp plant, another saleable article, much sought after in the home markets, both for its fibre and seed. The latter is noted in the last price current at 44*s.* to 48*s.* per hundredweight; and, considering the heaviness of the seed, it yields a remunerative price. The hemp plant will grow in any kind of soil, and could probably be grown throughout the Colony with profit; and to show what an important plant hemp is, which produces one of the best cordages, during the last three quarters of the year 1050 tons of cordage and rope have been imported. This shows the great importance of the attention of our colonists being called to the subject.

BEETROOT.—I am convinced that the soil and climate, especially in the neighbourhood of Mount Gambier, is admirably adapted for the growth of the beetroot, for the manufacture of sugar and other purposes. According to the latest statistical news from home, there are at present 1184 beet sugar works on the Continent of Europe, and the total produce of these is about four and a half million hundredweights of sugar annually; upon an average about 4000 lbs. is obtained from 500 cwt. of beet, and this quantity is the yield of about two and a half acres. The refuse, after the sugar is extracted, forms an excellent article of food for cattle, and is considered even better than any specially cultivated for the purpose; a good quality of paper is also made from it. The molasses is also used up for fodder, not being fit for sweetening on account of the mineral salt it contains. As mentioned before, there is

no doubt that the beet will grow in many districts of the Colony; and if we can produce the beet sugar for the same price as cane sugar imported, it will become a flourishing industry; and then we must consider the fact that with a beet sugar manufactory the fattening of cattle must be connected, which will also produce a fair return. But this is not all—the farmers, by beet-growing, will have the advantage of a rotation crop, the want of which is severely felt in South Australia. In Prussia, where beet sugar manufactories are established, no cereal fields are observable for miles around—the eye only meets beet fields, they paying the farmer far better than cereals.

Hops.—Of this very important plant we have already proof of successful growth in the samples of hops grown at Lobethal, Encounter Bay, Mount Barker, and Mount Gambier; at the latter locality it is already cultivated extensively, with satisfactory results. It is true we have not many favourable districts in the Colony for the profitable growth of this valuable plant; but there is no doubt that in other districts besides the above-named, suitable spots will be found.

Tobacco.—There is no doubt that many districts of the Colony are well adapted for the culture of tobacco. Much attention was given to its cultivation in the early days of the Colony, and superior tobacco was made; but its cultivation became entirely neglected when the high prices of wheat which have since ruled made that cultivation more remunerative than that of tobacco. I remember in the year 1851 seeing at Lyndoch Valley a tobacco-field which not only attracted my attention, but created my surprise and admiration, having scarcely seen better plants during my travels on the Orinoco. I will not maintain that the South Australian tobacco could, or ever will, surpass the South American or West Indian in flavour; but we shall produce, no doubt, a fair sample, just as good as is produced on the Continent. I was so much astonished at seeing this Lyndoch Valley field of tobacco that I measured some of the leaves—and on referring to my note-book I find that their average size was twenty-one inches long, by twelve inches wide. I am convinced that having gained

experience in its manufacture, we shall produce a fair sample; and should we even fail in this the first or second year, the produce could be used for sheepwash, and remunerate the grower. If we consider the great sum which the Government derives from the duty on imported tobacco, I think we should endeavour as much as possible to retain at least one part of the money in the Colony, which is yearly sent away for tobacco. I may repeat, there is not the slightest doubt that a great many districts in our Colony are adapted for the growth of this, I may say, indispensable luxury—namely, the South, the neighbourhood of Adelaide, Hope Valley, Mount Barker, Gumeracha, Blumberg, Lyndoch Valley—and many more favourable spots would be found. At the Botanic Garden good plants may be seen growing, notwithstanding the late unfavourable season, producing good leaves, without the slightest attention being paid to them. Local tobacco and cigar factories have been established, but at present mainly depend on imported leaf tobacco for their supply.

ZANTE CURRANTS, SULTANA AND OTHER RAISINS.—It is a gratifying fact to observe that our first sample of Zante currants sent to Melbourne are considered by our neighbours as of most excellent quality, superior, cleaner, and of better quality than that of the imported ones. And we in South Australia till now have thought little of them. The proverb, "A prophet is not thought much of in his own country," is here applicable. We produce an article which is considered superior to that we import, and yet very little has been done in the culture of the Zante currant and raisins. If we consider that the annual import of dried fruits into the Australian Colonies is generally more than £120,000, and as we know that our climate is in every way favourable to these productions, is it not surprising that no more attention has been paid to these sources of profit? I would strongly recommend all the *vignerons*, especially the smaller ones, having from one to three acres of vineyard, to graft all the worthless kinds of grapes with Zante currant, Sultana, and other raisin grapes. It is gratifying to me to have added something to this extensive branch of industry by the introduction of the Sultana



BOTANICAL GARDENS, ADELAIDE. (*Keeper's Cottage, Medicinal Plants, &c.*)

grape, which is regarded by the *vignerons* with extreme satisfaction. I may say that, from information received, probably more than two-thirds of the 1100 grafts I distributed last year have grown; and this valuable raïsin, which commands the highest prices in the European markets, may be considered as established in the Colony. Very little attention has been paid to the drying of apples, apricots, plums, figs, and other fruits, from which some profit could be derived, but which unfortunately are frequently left to rot on the ground.

ALMONDS.—Of these till now very little has been thought, and in consequence the trees have been utterly neglected, because, as the phrase goes, "they won't pay;" but I am of a different opinion, since I have seen that the almonds will form a profitable export. In the last London Prices Current, Jordan almonds are quoted at 85*s.* to 240*s.* per cwt.; and in their shells, 60*s.* to 70*s.* Is this not an encouragement to pay more attention to this, till now, neglected tree, which will grow in every locality—a tree which is satisfied with every soil, and will produce every year a bountiful return? We see hundreds, I may say thousands, of almond trees scattered over the Colony; we see trees in nearly every garden—but their fruits are worthless. I think two-thirds of the trees grown here are only seedling plants. Naturally they never will produce a marketable fruit; the grafting knife should be used, and I would recommend the Jordan and Brandis varieties, which are much sought after by the trade. I hope horticulturists, as well as agriculturists, will take this into their consideration; for it must be plain to them that almonds will pay for export for the little trouble bestowed on them. There may be many nooks and corners on their property where almost nothing else will grow. I can assure them the almond tree will be satisfied with such spots—only they must not neglect trenching the ground first.

OLIVES.—I think there is scarcely any country where the olive thrives better than in South Australia. Having been largely planted by the early colonists in a variety of situations, and in diverse soils, there is abundant evidence of

their facility of culture in the fine growth of the trees, yielding larger quantities of fruit, which is eagerly sought for by manufacturers of oil, now carrying on their operations with success. The samples produced are considered as fine as the best Italian oil, and, being pure, are of course far better than that usually imported. But little labour is required in the cultivation of the olive after the seedlings (which can be procured in abundance) are planted and grafted, and the picking of the fruit is easily done by women and children. The market price of the berries is about 5*s.* to 5*s.* 6*d.* per cwt., and oil in quantity has been sold at auction at from 6*s.* 6*d.* to 10*s.* per gallon, the retail price being 12*s.* for best quality. Large plantations have lately been made, and this industry may now be considered an established fact. There is a large home consumption and an unlimited export market.

RICINUS OR CASTOR OIL PLANT.—This tree, considered as worthless as the almond, we see thrive in every locality, and in every soil, poor or rich. We see it grow close to the coast in almost pure sand, covered with seed, and generally regarded as a nuisance. But the hundredweight of seed of this nuisance is noted, according to the last Prices Current, as worth 10*s.* to 12*s.* The ricinus, as I remarked, will grow where scarcely any other vegetation will grow, and such spots are generally found on farms. Why not plant them with ricinus? After planting, there is little or no trouble except gathering the seeds, which can be accomplished by children; and if a tree brings only 3*s.* to 4*s.* a year, it is worth the little attention bestowed on it.

MUSTARD furnishes a very important, and, I believe, a paying article of commerce, and I am satisfied would thrive with us in all our districts if it were not for the aphis. The mustard plant belongs to the same natural order as the cabbage plant —the *Cruciferæ*—whose representatives are, without exception, so unmercifully attacked by this scourge that I fear the mustard plant would not escape its ravages; but, as Australia is the land of anomalies, my fear may be premature, and the aphis may after all not do so much harm to the plant as I

fear. Our farmers should at least make some trials. The northern plains would probably be well adapted for the growth of the mustard, as the plants in too rich a soil would grow too luxuriant in their stalks and leaves. If we consider the great quantity of mustard imported into this Colony, there is no doubt the cultivation of the plant would pay.

RAPE.—If I did not fear the ravages of the aphis, as rape belongs to the same natural order as that of the mustard, I would strongly recommend the culture of this most valuable oil-producing plant, as its oil maintains high prices in the European markets, in consequence of the crops on the Continent not being with certainty depended on, as they are often destroyed by frost or snow, which we have not to fear in South Australia.

SUNFLOWER.—The extensive culture of the sunflower, especially in Russia and Germany, is a fact. The chief profit from this plant is procured from the seed, which contains forty per cent. of a sweet oil only second in value to the olive oil. It is now more than 200 years since this valuable plant, a native of Peru and Mexico, was introduced into Europe; and, strange to say, until now its valuable qualities were never brought to account. The Russian husbandmen were the first who bestowed their attention on the useful oil which the seeds contain. They commenced the cultivation of the sunflower first on a small scale, planting the seeds in nooks and corners, on the sides of walks, &c. The value of the oil soon became known, and was more and more appreciated, so that at the present time the cultivation of the sunflower in Russia is carried on to such an extent that in the year 1866 more than 100,000 cwt. of sunflower oil was manufactured, the value of which was one and a half million roubles. The third part of this oil was exported to the Prussian port of Stettin, where it was rapidly sold with rising prices. This export from Russia, and the steady increase of the culture of the sunflower there, opened the eyes of the German farmers, and they began the cultivation of the sunflower with the same profitable result. The oil, as I have already mentioned, is only second to the olive oil, and is not only used in house-keeping like the former, but mostly as a lubricator for the delicate machinery of textile fabrics which in-

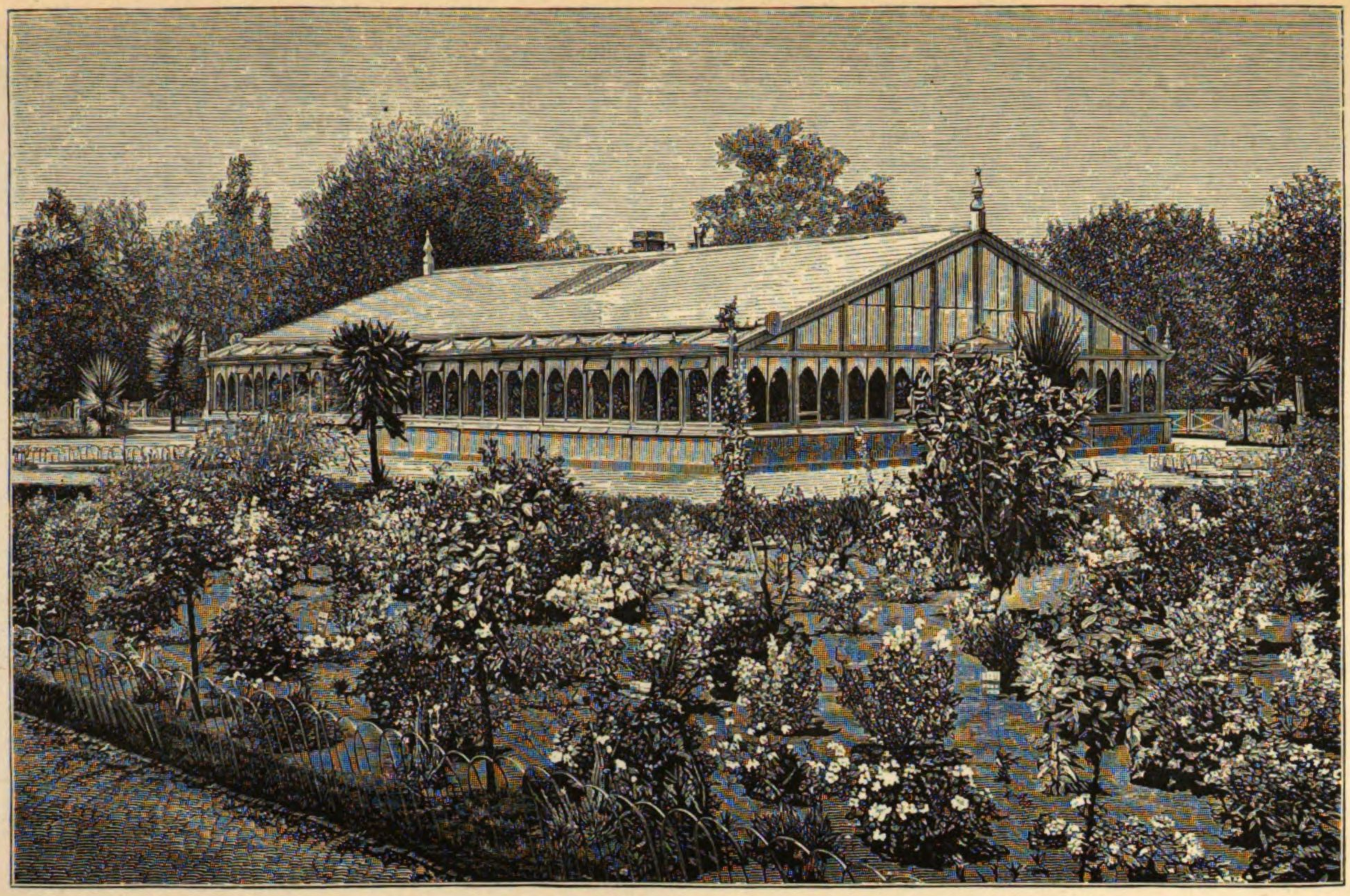
crease throughout Europe, and which in consequence have increased the demand for the expensive olive oil. From the stalks of the plant the Russians manufacture a valuable potash, the residuum is used as oil-cake for fattening cattle, and the leaves of the plant for manure. Should not this profitable culture of the sunflower in Russia and Germany also be an inducement to our farmers to introduce this payable branch of industry to our Colony? Climatic difficulties in the way of the growth of the sunflower do not exist in South Australia. We see the sunflower, with its smiling face, in our gardens, thrive most luxuriantly in every kind of soil. The only fault that could be found with it is that it exhausts the soil; yet this could be remedied by manure. Would it not be desirable that experimental trials should be made this season? Let us begin like the Russians, and plant the seeds first in nooks and corners; and should it succeed, cultivate it more extensively. The result should be freely discussed in our Farmers' Clubs. It may become in the future as profitable to South Australia as it is at the present time to Russia and Germany; and it is to be hoped that the farmers will give their earnest attention to this most important branch of industry.

The following extract from the New Land Act, lately brought into operation, shows the importance attached to this industry, and the special facilities granted to those who may intend planting olive, almond, and other trees mentioned therein:—

Cultivation of Olives, &c.

46. If any selector shall be desirous of engaging in the cultivation of osiers, olives, mulberries, vines, apples, pears, oranges, figs, almonds, or hops, or such other plants as the Governor in Council may define by Proclamation in the *Gazette*, the planting and cultivating in a husbandlike manner of one acre of land with any of the above trees or plants shall, for all the purposes of this Act, be deemed to be equivalent to the cultivation of six acres of such land as hereinbefore defined: Provided that such cultivating be *bonâ fide* continued and kept up to the satisfaction of the Commissioner until full payment of the purchase-money, but not otherwise: Provided that if such selector shall wish to grow artificial grass, as a rotation of crops, he may, every third year, plant and cultivate lucern or artificial grass for such purpose, and in that case the planting of three acres of land with lucern or artificial grass during such third year shall be deemed to be equivalent to the cultivation of one acre of cereal or root crops.

Canary Seed.—This is another plant whose culture till now has been entirely overlooked by our farmers, and which, I



BOTANICAL GARDENS, ADELAIDE. (*Victoria Regia House, Orchids, &c.*)

am sure, will thrive all over the Colony. It is a fact to be wondered at, if we consider the enormous prices often paid for this seed in the Colony, which not seldom have risen to 2*s.* and 2*s.* 6*d.* per pound. I think the generally ruling price—3*d.* to 4*d.* per pound—would leave the grower a fair margin for the little trouble in cultivating it, and it is a plant which would be satisfied with any soil and situation.

Gram, Vetches, Yellow Lupin, and Maize.—With the exception of oats and barley, very little attempt has been made by our farmers to grow other grain for cattle. I am most sanguine of the profitable growth of gram in this colony. "Gram" (says the *Inglewood Advertiser*) "bids fair to be ranked among our profitable products before long. Its value as horse-feed has long been acknowledged, and the possibility of growing it is now beyond a doubt. Some time ago Mr. J. Roberts, who cultivates one of those little patches of ground that dot the clearings made from the scrub here and there, planted a few rows of this valuable East India pea, and now he has a capital crop nearly ripe. The plants look strong and healthy, the drought notwithstanding, and are covered with filled pods. On one plant, covering not over four inches of ground, no less than 139 full-grown pods were counted." The successful cultivation of this plant would be a great good, and the attention of farmers can be very fairly directed towards it. The yellow lupin has for some years gained on the Continent a high fame with the farmers; in fact, it has supplanted the oats, vetches, and other horse-feed, as a plentiful and wholesome fodder, in its green state as well the seeds. The cultivation of maize is also overlooked, which, I am sure, will thrive in the South profitably.

Lentils.—This is a plant, I believe, very little known for food in England, but thought much of on the Continent, where it is cultivated to a great extent as one of the most profitable crops, as it thrives well even on stony and barren soils, and may be admirably adapted for certain districts in our Colony. The lentil has a traditional history, not alone on the Continent, but also in Arabia, where it is grown still more extensively, being considered as the plant used in the preparation of the

dish for which Esau sold his birthright to Jacob, as stated in the 25th chapter of Genesis. I am glad to see, in the last number of the *Journal of the Agricultural Society of New South Wales*, a gentleman (R. Wynne) also recommends the plant for extensive growing in Sydney. He says—"I saw hundreds of acres sown with the lentil in the neighbourhood of Bethlehem. The soil where I found the lentil flourishing with such abundant growth was of the poorest description, and so stony that it was a wonder to me how any kind of useful plant could thrive there at all. Having myself, as an invalid, derived very great benefit from it in the form of Dr. Barry's Revalenta, I can honestly recommend it as the most wholesome article of diet of which I have any experience, the most essentially valuable property of it being the facility with which it can be assimilated, and its great power of nutrition. I need hardly say it would be a source of real gratification to me if my humble efforts to introduce it to this country should have succeeded in calling the attention of agriculturists and all well-wishers of the Colony to its valuable properties as a health-restoring food; and I am not without hope of seeing it become one of the ordinary products of this Colony." The Continental people in this Colony know its value, and large quantities of lentils are imported by our German merchants.

CAPERS.—There is no doubt we could produce this desirable luxury equally well as in the southern part of Europe. In the neighbourhood of Toulon it is cultivated in the orchards in the intervals between figs and olive-trees. As a pickle the flower-buds of the caper are in great esteem, and form an important article of commerce throughout Europe. In the Mediterranean the flower-buds of the caper are gathered just before they begin to expand, which forms a daily occupation for children during six months, when the plants are in a flowering state. As the buds are gathered, they are thrown into a cask, among as much salt and vinegar as is sufficient to cover them, and, as the supply of capers is increased, more vinegar is added. When the caper season closes, the casks are emptied, and the buds assorted according to their size and colour—the smallest and greenest being reckoned the best—and put in smaller casks

of fresh vinegar for commerce; and in this state they will keep for five or six years. Considering the little work the growing of this important commercial article involves, it would be worth while for our horticulturists, especially in the gullies, where this plant will grow most luxuriantly, to make the attempt to cultivate the true caper (*Capparis spinosa*).

CHICORY.—Since the introduction of this plant in the Colony it has become in some places so prolific as to be considered a nuisance, and yet of this we import yearly great quantities, as shown in our import returns, viz.:—Total for the last three quarters, 54,960 lbs., say at 23*s.* 4*d.* per cwt., £629 15*s.* The manufacture of chicory is so simple and inexpensive that we might easily produce sufficient not only for our home consumption, but also for that of the neighbouring Colonies.

LIQUORICE.—My attention has been called to the liquorice plant, *Glycyrrhiza glabra*, Dec., on which, in perusing the last number of the *Journal of Applied Science*, I found an interesting article in reference to the consumption of this valuable commercial plant. It could be grown here with little trouble and cost in almost any locality and soil. According to the above-mentioned journal, it arrives at maturity in from three to four years, when the roots can be taken up, and the proprietor may expect to derive some return for his outlay in rent and labour. The depth to which these strike downwards often equals the height of a man, and the soil needs, therefore, to be free from stones, which cause the roots to become crooked or warped, and thus diminish the value of the liquorice as a saleable commodity. The same land will produce a continuous crop; but then a good addition of manure is needed. The ground, to be properly prepared, must be spade-trenched to a depth of three to four feet, and laid in ridges upon the top until the spring; when the mould has become pulverized, the ridges can be levelled and prepared for planting. The beds are three to four feet wide, and must be kept clean during the summer, and about November (this in South Australia would be in June) when the sap has descended and the tops appear yellow, the old stems or stalks are cut off close to the ground

with a sharp pruning knife, the spaces between the roots being turned over and left rough. The roots are usually dug up with a large three-pronged fork, and stacked in trenches, and this stacking is effected in a dry and sheltered place, the roots being placed upright with layers of sand between them, and a good layer of several inches thick on the top. In this manner the stack is preserved by the proprietor until required for market.

Osier.—Not only does this very useful shrub keep the embankments of rivers from falling in, but it would also give a profit to the grower, having the advantage of giving employment to the basketmakers. I need only mention the great number of baskets and various other osier work yearly imported into this Colony from Europe and America. For favourable places for its cultivation, I mention only the banks of the Onkaparinga, the Murray Flats, and Inman Valley; but many other localities undoubtedly would be found.

Broom Millet supplies the material of a not unimportant article, viz., American brooms, which are so much imported, and for which we send a large sum of money away, that could be retained in the Colony, as there is not the slightest doubt that the broom millet will grow just as well with us as the *Sorghum saccharatum* does, and the skill for manufacturing the broom might soon be obtained. The millet will grow well especially in the hills and the Southern Districts. It should be sown in the latter end of August, but rather thin, so that the plants may grow vigorous, and produce a greater development of inflorescence, which part is used for the manufacture of the broom. This industry has already been introduced into Victoria and New South Wales; and in the latter Colony, especially Newcastle, the brooms are largely manufactured, and already exported to South Australia.

The Esparto Grass (*Macrochloa tenacissima*).—A native of Spain, Portugal, Greece, and North Africa. It has gained during the last few years a great mercantile reputation in regard to the valuable fibre, not alone for the manufacture of ropes and other articles, but as contributing also an excellent material for the best writing paper, without any other admix-

ture. Thus from the great use now made of it by the paper-makers, it has become an essential article of import into England and other places, and a source of wealth to the countries producing it. The import in 1871 into England alone is considered about 140,000 tons, and that of Esparto grass, ropes, and other articles manufactured from it, about 19,000 tons. Notwithstanding this large importation of the raw material for paper-making, and that the paper-makers use of late a good many other substances for paper-making not used before, the scarcity of material becomes more evident every day, and the consequence is the constant rise in the price of paper. The *Gardeners' Chronicle*, 15th June, 1872, says:—"It is with some concern that we learn that both in Algeria and Spain, instead of mowing the Esparto grass at the proper season, the natives pluck it up in the most reckless manner." Consul Turner, of Cartagena, says:—"It is very evident to all concerned that these people are destroying the growth of the grass by their manner of plucking it." From the above-named port there was a falling-off during the past year in quantity exported to the amount of 5000 tons, which in a great measure is to be accounted for by the present reckless system of collecting it. Here again is an instance of natural production being wantonly destroyed by man, in spite of his deriving a benefit from it; we may thus say the progress of civilization is the occasion of waste and destruction. The value of dry Esparto grass is about £5 to £5 10*s.* per ton; and it is said that, under favourable circumstances, as much as from six to eight tons can be obtained from an acre. It grows on the poorest soil, especially limestone or sand; in fact, where the soil will produce no other vegetation the Esparto grass will grow. It grows even in the sands of the Sahara, on stony hills, and on the very brink of the coast. I have not the slightest doubt that the grass will thrive with us, and that the many thousands of acres of arid land, of a limestone or sandy nature, which is scarcely fit for pasture, may, by sowing with Esparto grass, become useful. Considering the similarity of our climate with that of Spain, and, in fact, the north of Africa, we have no fear that our droughts would affect its

growth — and how its introduction would benefit South Australia if our deserts could be changed into productive districts! For a long time past I have endeavoured to introduce seed of this valuable grass as an experiment, but without success. I communicated with the Botanic Gardens and seedsmen in Europe on the subject; the answer was—"Not obtainable, the seed is not in the trade; the Spaniards won't part with it"—and I had already given up the hope of obtaining any. The more agreeably therefore was I surprised by receiving one ounce of seed from Mr. Bull, of London. I am glad to say that this seed arrived in good condition, though it is said the Spaniards, before parting with the seed, destroy its power of germinating, to prevent its introduction into other countries. My seed must have escaped such manipulation, as it has nearly all grown, and I am now in possession of about 1000 plants, all of which I intend to plant out to procure as much seed as possible for distribution next year. It is now most extensively planted in the south of France; and it is said that no other crop will pay better, especially considering that it will grow on the poorest soils. It is propagated by seeds, and also by dividing the roots. The question will naturally be asked—Suppose we succeed in growing the grass here, where shall we find a market for it? Our enterprising and go-ahead neighbours in Victoria have already established a paper-mill, and a second one is contemplated in Sydney; so that, if we succeed, the market for the grass is close at hand, and I think it would even pay to export to England, as a hydraulic press would reduce the bulk materially.

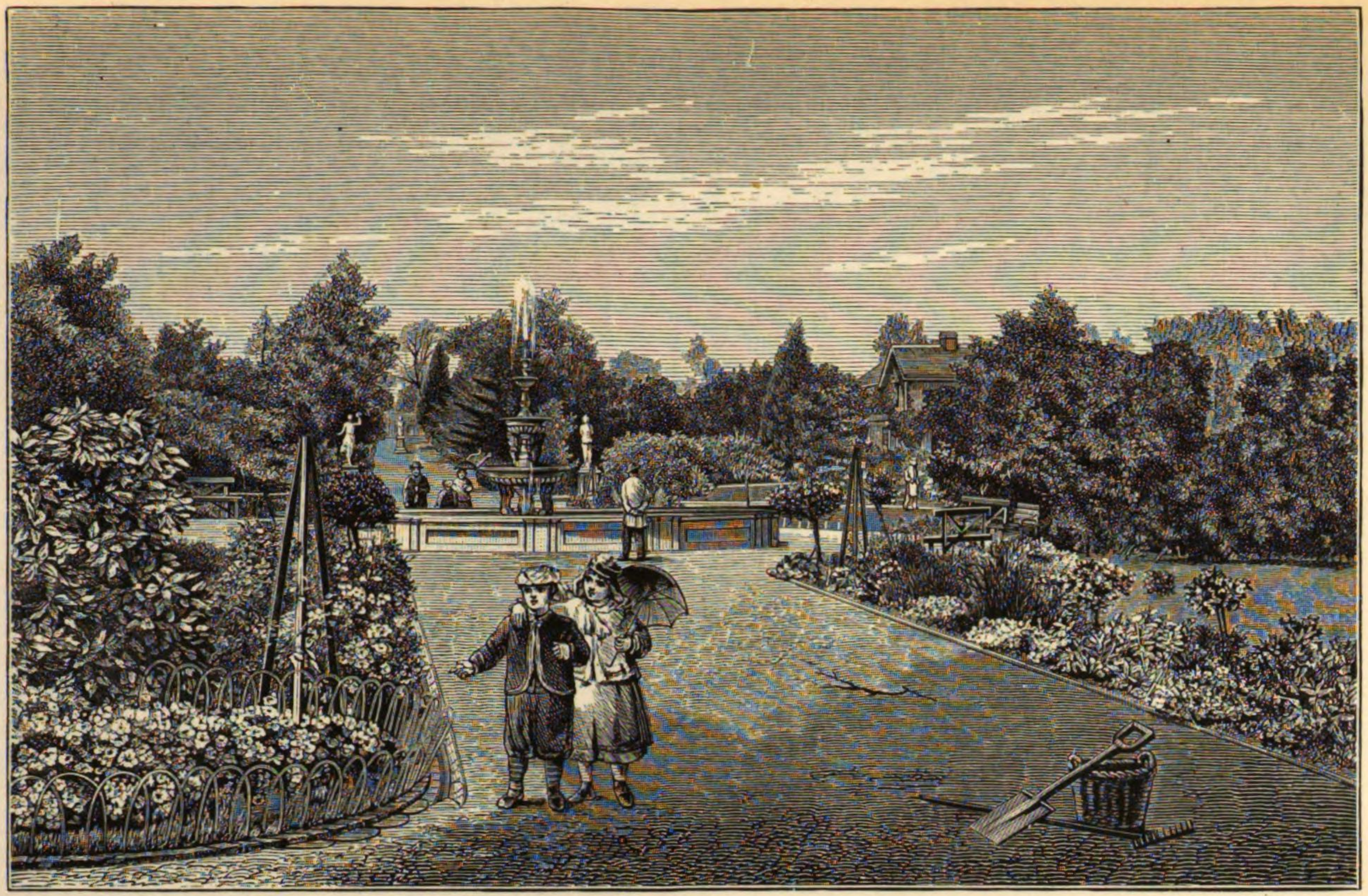
Opium.—South Australia, as far as climate and soil are concerned, offers no difficulty to the cultivation of the poppy, as we see it thriving in many parts of the Colony, and probably we could produce a good sample of the drug. Mr. G. Francis exhibited not long ago, at the Agricultural Show, opium prepared by him, which was considered as fair a sample as could be derived from the first experiment. If we consider the enormous sum which is yearly expended in opium, and that the cultivation and manufacture can be undertaken by

young people, it is highly desirable that an attempt should be made to cultivate the poppy.

COCHINEAL.—Every one of us is acquainted with the cochineal insect which produces the splendid, valuable, and much used dye called "carmine," and of which Mexico and the West India Islands export large quantities every year. The trade is likewise supplied with the same article from Brazil and East India, but Mexico furnishes the largest quantity, and at the same time the finest quality. Till the year 1725, the breeding of the cochineal insect was entirely confined to Mexico; and the Government, with the strictest care, kept it secret; and till then it was generally believed in Europe that the cochineal was not an insect, but a kind of seed. In the year 1785, Thierre de Menonville, a Frenchman, with the greatest danger to his life, brought a few living insects to French Domingo, where they soon were acclimatized. During 1827 the insect was, by Bertholet, introduced to the Canary Islands, and lately, with the best results, in Corsica and Spain. If the insect thrives well in Spain and Corsica, why should it not do the same in Australia? Both kinds of the cochineal plant, *Opuntia Tuna* and *Opuntia coccinellifera*, which I introduced by raising from seed, grow luxuriantly in the borders at the garden, without having had the slightest care bestowed upon them; this proves that the plant will thrive in South Australia. The second and most important question is, how to introduce the insect. This could be done only on living plants in so-called Wardian cases. It is not the place to give a description of the treatment of the cochineal insect, and the preparation of the carmine; but to give you only one instance of the extent of the cochineal trade, I will mention that the export of cochineal alone of the Mexican Province Oaxaca amounts to three-fourths of a million dollars annually. Now, assuming that one pound of cochineal is worth $10, and that 70,000 insects make a pound, they must rear an immense quantity of insects. Not that I am sanguine of its success in this Colony, but we should try it. It is true the discovery of the splendid aniline colours have done the

carmine trade some harm; notwithstanding which it is still a most flourishing trade.

PERFUMES.—An abler pen than mine has already drawn the attention of the public to this one of the great industries. Mr. S. Davenport, in his able pamphlet on the same subject, has referred to the great benefit to be derived from this source; and I have much pleasure in commending its perusal. If we consider that British India and Europe consume about 150,000 gallons of handkerchief perfume yearly; that the English revenue for Eau de Cologne alone is about £8000 a year; that the total revenue for imported perfumes is estimated at about £40,000, and that one great perfume distillery at Cannes, in France, uses annually about one hundred and forty thousand pounds of orange blossoms, twenty thousand pounds of acacia flowers (*Acacia Farnesiana*), one hundred and forty thousand pounds of rose flower-leaves, thirty-two thousand pounds of jasmin blossoms, twenty thousand pounds of tube-roses, together with a great many other sweet herbs, we may judge of the immense quantity of material used for perfumes. Most of the flowers which provide the material for perfumes grow luxuriantly with us, namely, mignonette, verbena, jasmin, rose, lavender, *Acacia Farnesiana*, heliotrope, rosemary, pepper-mint, violets, wall-flowers, laurel, and oranges, from which alone three different scents are produced. These plants thrive probably in greater perfection here than in any part of the world. No doubt South Australia should be a perfume-producing country. We see flourishing here some of the most valuable scent plants. We have the wattle, myall wood, and other native plants, yielding valuable scents. But two things are needed to encourage the enterprise. First—Freedom of the still, so as to license distilling in vessels of less than twenty-five gallons' capacity; and, secondly, the *bonâ fide* advertisement of a capitalist manufacturer, that he will buy any quantity of specified flowers, leaves, roots, or plants, at a marketable price. Then some farmer may be tempted to plant a few acres of lavender or mint, another geraniums or rosemary, another aniseed, whilst plantations in hedgerows, or



BOTANICAL GARDENS, ADELAIDE. (*The Middle Path.*)

such like places, of roses, cassia, together with contributions from gardens, would lay the foundation for an export trade. Then it must be also noted that whatever the value which the plants yield in flower, fruit, leaves, and stems, it is increased threefold under manufacture, and this manufacture consumes other local produce, called into existence by it, such as olive and other oils, fats, alkalies, wheaten flower, colouring matter, pottery and glass ware, which combine to make the farmers and the manufacturers contribute largely to the maintenance of population and the wealth of the perfume countries. To advance this highly remunerative industry, as I have already mentioned, a modification in the law of licensing stills should be made to *bonâ fide* perfume distillers, as the present law restricts stills to a range of capacity between 25 and 50 gallons. Perfume stills for the finer perfumes are best at about 8 to 10 gallons. It is therefore to be hoped that our legislators would take this into their earnest consideration. To encourage the development of new industries, every facility, with respect to distillation of perfumes, should be given, even at the sacrifice of a small amount of revenue. To show the value of perfumes to the countries adapted for their production, the following table, compiled from the publications of Piesse and Brande, and the *Cornhill Magazine*, October, 1864, may show why it is so:—

	£
One acre of jasmin plants, 80,000, will produce 5000 lbs. of flowers, value 1*s.*	250
One acre rose trees, 10,000, will produce 2000 lbs. of flowers, value 9*d.*	75
One acre of orange trees, 100, at ten years old, 2000 lbs. of flowers, value 6*d.*	50
One acre of violets, 1600 lbs. of flowers, value 2*s.*	160
One acre of cassia trees (*Acacia Farnesiana*), 302, at three years, 900 lbs. of flowers, value 2*s.*	90
One acre geranium plants, 16,000, 40,000lbs. leaves, producing 2 oz. of distilled otto per cwt., at 5*s.* per oz.	200
One acre of lavender, 3547, giving flowers for distillation, value	30

Further, without knowing the produce per acre, I add the otto per cwt., which the following plants are said to yield:—Rosemary, per cwt., will yield 24 oz. of otto oil; aniseed, 35 oz.; caraways, from 3 lbs. to 4 lbs. 12 oz. fennel seed, 2 lbs.; pachouli, 28 oz.

THE NORTHERN TERRITORY.

In addition to what is said in a previous chapter, giving a general outline of the Northern Territory, it is now my intention to state how far its capabilities and resources may prove of advantage to colonists and the Mother Country, in regard to its capabilities for tropical agriculture.

I will first say a few words on the great importance of my scheme proposed to the late Government, for the establishment of a standard experimental nursery for tropical commercial plants, at our young settlement, Port Darwin. My idea is, to lay out about eighty acres of land adapted to the growth of tropical commercial plants, so that at least plants or cuttings may be available for cultivation by the settlers; and it would be a matter of very considerable moment to new settlers who contemplate tropical agriculture, to obtain from such an establishment suitable plants, seeds, &c., at a low price, to commence with. If the grower had to import his own, the delays would be great, as there would be, at least during the first few years, little opportunity to import such plants from other countries. The cost of such an establishment would not be great; and, in a few years, if the Government charges a trifle for the plants, probably the garden would pay its own expenses. I made the following proposal to the late Government:—"Sir—I have the honour to lay before you a scheme for forming at Port Darwin a standard experimental nursery of tropical commercial plants, for the benefit of future colonists who may settle there as tropical agriculturists. Of all the vegetable products capable of being propagated within the tropics, a very large proportion are objects of commercial value in Europe. The favourable report of competent judges who have visited the country leaves no doubt that Port Darwin is eminently suited to the cultivation of such productions. Having had now an opportunity of examining various soils from the Northern Territory, I find they are very similar, and by no means inferior, to the soils which I have received from Java, Hongkong, Ceylon, Mauritius, and other tropical countries with which I am acquainted. I am strongly of opinion that the soils of the Northern Terri-

tory would prove appropriate for the same tropical productions as are cultivated in the countries above named; and the climate may be also considered very favourable for the growth, leaving every prospect of success for tropical agriculture. With respect to the mode with which these objects might be usefully carried out, I would suggest that about thirty acres of land should be selected as a standard nursery. In making a choice of such land, it would be very desirable that due regard should be had to the variety of soil and undulating character of the country, as suitable to the various physical requirements of the plants intended to be cultivated. The following plants I have good reason to believe could be cultivated with success, viz., sugar, cotton, coffee, tea, rice, cassava, arrowroot, indigo, ginger, cardamom, nutmeg, cocoa, tobacco, maize, pepper, castor oil plant, pimento, vanilla, sarsaparilla, rhea or Chinese grass plant, cocoa-nut palm, and many more. From the information I have received, I think that the tableland situated about thirty miles from the coast would prove favourable for the cultivation of the cinchona or quinine tree; the importance of which is so well known that most of the Governments of tropical and subtropical countries are now turning their attention to its cultivation, the demand for quinine now exceeding the supply rendering it a matter of great consideration. I would beg to add, in laying out such a standard experimental nursery the success would greatly depend on the ability and experience of the superintendent appointed. It would prove highly important, if judiciously managed, to the future settlers by enabling them to procure from such an establishment plants, cuttings, seeds, &c., only to commence the cultivation of such as are suitable to the country. As director of this Garden I could materially assist the carrying out of this project, as being in constant communication with the Botanic Gardens of tropical countries, I could readily procure from them such plants, seeds, &c., as might be required, and conveniently forward them when the intended communication with the new settlement is established." We have the proof how important and necessary such an establishment would be for the development of the resources of our new Province. It would be useless to dwell upon the importance

of the cultivation of sugar and cotton, which has been the foundation of the prosperity of many Colonies; and I do not hesitate to say that all kinds of cotton, from the best long staple down to the finest short staple, might be cultivated, which would vie with the best in the world; nor do I hesitate to say that sugar and cotton will become in future the great staples of Port Darwin.

But the fertility of the soil is adapted for numerous other branches of tropical agriculture, and we may expect a safe return for the investment of capital in the cultivation of other crops demanding less capital and less manual labour than sugar and cotton, of which other crops I will enumerate a few.

Of the cereal grains, Indian corn deserves more attention than it has hitherto received. Indian millet, which, under the name of Guinea corn, is so extensively cultivated in the West Indies, might be raised to a large extent. The cultivation of cocoa will be most suitable to the less wealthy individual, as it demands so little labour and outlay. Alexander Humboldt observes, in alluding to Spanish America, that cocoa plantations are occupied by persons in humble condition, who prepare for themselves and their children a slow but certain fortune. A single labourer is sufficient to aid them in their plantations, and thirty thousand trees assure competence for a generation and a half.

Of equal interest would prove the cultivation of cinnamon and nutmeg, of which the average home consumption is estimated at one hundred and twenty thousand pounds' weight per annum. Pepper, pimento, could undoubtedly be cultivated with great success in Port Darwin, and form an article of export. A rich soil in mountains, valleys, or along the banks of rivers which are not subjected to inundations, is considered to be the most eligible for the growth of ginger, cardamoms, and turmeric.

These valuable commercial plants I am convinced will grow in marshy situations. Also the valuable dye indigo, which thrives so well in a moist climate, would pay the cultivator most handsomely.

Numerous other articles might be recommended to be

raised, viz., senna and numerous species of cassia, to which genus that drug belongs; sarsaparilla, and many other medical plants, for all of which the Northern Territory would afford proper soil for cultivation.

Before closing, I must say a few words in regard to the cultivation of the cinchona or quinine tree, for which every possible attempt should be made at Port Darwin. It is a well-known fact that the consumption of quinine has increased enormously, but in consequence of the wanton destruction of the quinine-tree forest in South America, the demand has exceeded the supply during the last few years; and any effort that can be made to increase the supply, and thus reduce the high price, is well worthy the attentive consideration of every one interested in alleviating the sufferings of humanity. Thousands of people died in the late fever in Mauritius and the East Indies for want of quinine; they had not the means to give the enormous prices asked for it. Probably the tree might thrive at Port Darwin. Why should we not make the attempt to grow quinine there, and thus become benefactors to ourselves and others? It is well known that most of the Governments of tropical and sub-tropical countries are now turning their attention to its cultivation. About 1000 quinine trees have lately been planted in the Island of St. Helena. The quinine trees do well in Mauritius, Queensland, Ceylon. Probably their cultivation can also be successfully accomplished at Port Darwin.

The synopsis of the Flora of South Australia is mostly compiled from the valuable work of G. Bentham and F. Mueller's "Flora Australiensis." By the constantly occurring new discoveries, especially in the central part of South Australia, the synopsis cannot be considered quite complete.

The plants enumerated in the intra-tropical Flora have been mostly collected by Mr. Schultz in that locality.

DICOTYLEDONS.

RANUNCULACEÆ.

Indigenous in Australia, 5 Genera.
South Australia, 2 Genera.

Extra-Tropical Flora.

Clematis microphylla, Dec.
Ranunculus aquatilis, Lin.
Ranunculus lappaceus, Sm.
rivularis, Banks.

Intra-Tropical.

Clematis glycinoides, Dec.

DILLENIACEÆ.

Indigenous in Australia, 5 Genera.
South Australia, 2 Genera.

Extra-Tropical.

Hibbertia sericea, Benth.
virgata, R. Br.
Billardieri, F. Muell.
Hibbertia stricta, R. Br.
fasciculata, R. Br.
glaberrima, F. Muell.

Intra-Tropical.

Hibbertia dealbata, Benth.
angustifolia, Benth.
lepidota, R. Br.
Hibbertia oblongata, R. Br.
Pachynema dilatatum, Benth.
junceum, Benth.

MAGNOLIACEÆ.

Indigenous in Australia, 1 Genus.
No representative in South Australia.

ANONACEÆ.

Indigenous in Australia, 6 Genera.
South Australia, 1 Genus.

Intra-Tropical.

Polyalthia nitidissima, Benth.

MENISPERMACEÆ.

Indigenous in Australia, 7 Genera.
South Australia, 1 Genera.

Intra-Tropical.

Stephania hernandiæfolia, Walp.

NYMPHÆACEÆ.

Indigenous in Australia, 3 Genera.
South Australia, 2 Genera.

Intra-Tropical.

Nymphæa gigantea, Hook.
Nelumbium speciosum, Willd.

PAPAVERACEÆ.

Indigenous in Australia, 1 Genus.
South Australia, 1 Genus.

Extra-Tropical.

Papaver horridum, Dec.

CRUCIFERÆ.

Indigenous in Australia, 15 Genera.
South Australia, 8 Genera.

Extra-Tropical.

Nasturtium palustre, Dec.
Alyssum linifolium, Steph.
Sisymbrium officinale, Scop.
Cardamine laciniata, F. Muell.
hirsuta, Lin.
Blennodia filifolia, Benth.
trisecta, Benth.
nasturtioides, Benth.
cardaminoides, F. Muell.
curvipes, F. Muell.
brevipes, F. Muell.
lasiocarpa, F. Muell.
Blennodia canescens, R. Br.
Stenopetalum velutinum, F. Muell.
lineare, R. Br.
sphærocarpum, F. Muell.
nutans, F. Muell.
Capsella procumbens, Fries.
Lepidium phlebopetalum, F. Muell.
strongylophyllum, F. Muell.
papillosum, F. Muell.
foliosum, Desv.
ruderale, Lin.

CAPPARIDEÆ.

Indigenous in Australia, 7 Genera.
South Australia, 4 Genera.

Extra-Tropical.

Capparis Mitchelli, Lindl.

Intra-Tropical.

Cleome tetrandra, Banks.
oxalidea, F. Muell.
Polanisia viscosa, Dec.
Cadaba capparoides, Dec.
Capparis umbellata, R. Br.
umbonata, Lindl.
lucida, R. Br.
quiniflora, Dec.

VIOLARIEÆ.

Indigenous in Australia, 3 Genera.
South Australia, 2 Genera.

Extra-Tropical.

Viola betonicæfolia, Sm.
hederacea, Labill.
Ionidium floribundum, Walp.

Intra-Tropical.

Ionidium aurantiacum, F. Muell.

BIXINEÆ.

Indigenous in Australia, 4 Genera.
South Australia, 1 Genus.

Extra-Tropical.

Cochlospermum Fraseri, Planch.
heteroneurum, F. Muell.
Cochlospermum Gregorii, F. Muell.

PITTOSPOREÆ.

Indigenous in Australia, 9 Genera.
South Australia, 4 Genera.

Pittosporum phillyræoides, Dec.
Bursaria spinosa, Cav.
Marianthus bignoniaceus, F. Muell.
Billardiera scandens, Sm.
Billardiera cymosa, F. Muell.
Cheiranthera linearis, A. Cunn.
volubilis, Benth.

Intra-Tropical.

Citriobatus pauciflorus, A. Cunn.

TREMANDREÆ.

Indigenous in Australia, 3 Genera.
South Australia, 1 Genus.

Extra-Tropical.

Tetratheca pilosa, Labill.

POLYGALEÆ.

Indigenous in Australia, 3 Genera.
South Australia, 2 Genera.

Extra-Tropical.

Comesperma volubile, Labill.
calymega, Labill.
Comesperma polygaloides, F. Muell.

Intra-Tropical.

Polygala leptalea, Dec.
eriocephala, F. Muell.
orbicularis, Benth.
Polygala arvensis, Willd.
rhinanthoides, Soland.
stenoclada, Benth.

FRANKENIACEÆ.

Indigenous in Australia, 1 Genus.

Extra-Tropical.

Frankenia pauciflora, Dec.

CARYOPHYLLEÆ.

Indigenous in Australia, 10 Genera.
South Australia, 8 Genera.

Extra-Tropical.

Gypsophila tubulosa, Boiss.
Silene gallica, Lin.
Cerastium vulgatum, Lin.
Stellaria glauca, With.
multiflora, Hook.
Sagina procumbens, Lin.
Spergularia rubra, Pers.
Polycarpon tetraphyllum, Lin.
Polycarpæa synandra, F. Muell

Intra-Tropical.

Polycarpæa longiflora, F. Muell.
violacea, Benth.
staminodina, F. Muell.
Polycarpæa corymbosa, Lam.
breviflora, F. Muell.
involucrata, F. Muell.

PORTULACEÆ.

Indigenous in Australia, 4 Genera.
South Australia, 3 Genera.

Extra-Tropical.

Portulaca oleracea, Lin.
Calandrinia polyandra, Benth.
pusilla, Lindl.
volubilis, Benth.
Calandrinia calyptrata, Hook.
pygmæa, F. Muell.
Claytonia australasica, Hook.

Intra-Tropical.

Portulaca bicolor, F. Muell.
napiformis, F. Muell.
australis, Endl.
Portulaca digyna, F. Muell.
Calandrinia uniflora, F. Muell.
gracilis, Benth.

ELATINEÆ.

Indigenous in Australia, 2 Genera.
South Australia, 2 Genera.

Extra-Tropical.

Elatine americana, Arn.
Bergia pusilla, Benth.
Bergia perennis, F. Muell.

HYPERICINEÆ.

Indigenous in Australia, 1 Genus.

Extra-Tropical.

Hypericum japonicum, Thunb.

GUTTIFERÆ.

Indigenous in Australia, 1 Genus.
No representative in South Australia.

MALVACEÆ.

Indigenous in Australia, 15 Genera.
South Australia, 13 Genera.

Extra-Tropical.

Lavatera plebeia, Sims.
Malvastrum spicatum, A. Gray.
Plagianthus spicatus, Benth.
glomeratus, Benth.
microphyllus, F. Muell.
Sida corrugata, Lindl.
intricata, F. Muell.
virgata, Hook.
petrophila, F. Muell.
calyxhymenia, J. Gay.
Abutilon leucopetalum, F. Muell.
Avicennæ, Gaertn.
Fraseri, Hook.
Hibiscus Trionum, Lin.
Krichauffianus, F. Muell.
Huegelii, Endl.
Fugosia hakeæfolia, Hook.
Gossypium Sturtii, F. Muell.
Codonocarpus cotinifolius, F. Muell.

Intra-Tropical.

Sida macropoda, F. Muell.
subspicata, F. Muell.
spinosa, Lin.
rhombifolia, Lin.
cordifolia, Lin.
Abutilon indicum, G. Don.
amplum, Benth.
auritum, G. Don.
Urena lobata, Lin.
Hibiscus rhodopetalus, F. Muell.
Trionum, Lin.
Hibiscus radiatus, Cav.
zonatus, F. Muell.
leptocladus, Benth.
geranioides, A. Cunn.
tiliaceus, Lin.
divaricatus, Grah.
Fugosia punctata, Benth.
Thespesia populnea, Corr.
Adansonia Gregorii, F. Muell.
Bombax malabaricum, Dec.

STERCULIACEÆ.

Indigenous in Australia, 19 Genera.
South Australia, 6 Genera.

Extra-Tropical.

Thomasia petalocalyx, F. Muell.
Lasiopetalum discolor, Hook.
Behrii, F. Muell.
Lasiopetalum Baueri, Steetz.
Schulzenii, Benth.

Intra-Tropical.

Sterculia fœtida, Lin.
ramiflora, Benth.
caudata, Heward.
quadrifida, R. Br.
Helicteres Isora, Lin.
Melochia corchorifolia, Lin.
Waltheria americana, Lin.

TILIACEÆ.

Indigenous in Australia, 7 Genera.
South Australia, 4 Genera.

Intra-Tropical.

Grewia orientalis, Lin.
multiflora, Juss.
polygama, Roxb.
breviflora, Benth.
Triumfetta appendiculata, F. Muell.
glaucescens, R. Br.
Corchorus acutangulus, Lam.
fascicularis, Lam.
pumilio, R. Br.
sidoides, F. Muell.
Elæocarpus obovatus, G. Don.

LINEÆ.

Indigenous in Australia, 2 Genera.
South Australia, 1 Genus.

Extra-Tropical.

Linum marginale, A. Cunn.

MALPIGHIACEÆ.

Indigenous in Australia, 2 Genera.
No representative in South Australia.

ZYGOPHYLLEÆ.

Indigenous in Australia, 3 Genera.
South Australia, 3 Genera.

Extra-Tropical.

Tribulus terrestris, Lin.
hystrix, R. Br.
Nitraria Schoberi, Lin.
Zygophyllum apiculatum, F. Muell.
glaucescens, F. Muell.
Zygophyllum iodocarpum, F. Muell.
prismatothecum, F. Muell.
Billardieri, Dec.
fruticulosum, Dec.

Intra-Tropical.

Tribulus cistoides, Lin.
pentandrus, Benth.
Tribulus bicolor, F. Muell.
angustifolius, Benth.

GERANIACEÆ.

Indigenous in Australia, 4 Genera.
South Australia, 4 Genera.

Extra-Tropical.

Geranium dissectum, Lin.
Erodium cygnorum, Nees.
cicutarium, Lher.
Pelargonium australe, Willd.
Rodneyanum, Lindl.
Oxalis corniculata, Lin.

SIMARUBEÆ.

Indigenous in Australia, 6 Genera.
South Australia, 1 Genus.

Intra-Tropical.

Harrisonia Brownii, A. Juss.



GULLY NEAR MOUNT BARKER ROAD.

RUTACEÆ.

Indigenous in Australia, 29 Genera.
South Australia, 9 Genera.

Extra-Tropical.

Zieria veronicea, F. Muell.
Boronia Edwardsii, Benth.
cærulescens, F. Muell.
polygalifolia, Sm.
inornata, Turcz.
filifolia, F. Muell.
Eriostemon difformis, A. Cunn.
Phebalium pungens, Benth.
bilobum, Lindl.
Phebalium linearis, A. Cunn.
glandulosum, Hook.
Microcybe pauciflora, Turcz.
Correa æmula, F. Muell.
alba, Andr.
speciosa, Ait.
decumbens, F. Muell.
Geijera parviflora, Lindl.

Intra-Tropical.

Boronia affinis, R. Br.
lanceolata, F. Muell.
Zanthoxylum parviflorum, Benth.
Micromelum pubescens, Blume.

BURSERACEÆ.

Indigenous in Australia, 2 Genera.
South Australia, 1 Genus.

Extra-Tropical.

Canarium australasicum, F. Muell.

MELIACEÆ.

Indigenous in Australia, 10 Genera.
South Australia, 3 Genera.

Intra-Tropical.

Dysoxylon Muelleri, Benth.
Owenia vernicosa, F. Muell.
Owenia reticulata, F. Muell.
Carapa moluccensis, Lam.

OLACINEÆ.

Indigenous in Australia, 6 Genera.
South Australia, 1 Genus.

Extra-Tropical.

Olax Benthamiana, Miq.

Intra-Tropical.

Opilia amentacea, Roxb.

ILICINEÆ.

Indigenous in Australia, 1 Genus.
No representative in South Australia.

CELASTRINEÆ.

Indigenous in Australia, 5 Genera.
South Australia, 2 Genera.

Intra-Tropical.

Celastrus Cunninghamii, F. Muell.
Denhamia oleaster, F. Muell.
Denhamia obscura, Meisn.

STACKHOUSIEÆ.

Indigenous in Australia, 1 Genus.

Extra-Tropical.

Stackhousia spathulata, Sieb. | Stackhousia monogyna, Labill.

Intra-Tropical.

Stackhousia viminea, Sm.

RHAMNEÆ.

Indigenous in Australia, 12 Genera.
South Australia, 7 Genera.

Extra-Tropical.

Pomaderris apetala, Labill.
obcordata, Fenzl.
racemosa, Hook.
Spyridium parvifolium, F. Muell.
spathulatum, F. Muell.
phlebophyllum, F. Muell.
coactilifolium, Reissek.
halmaturinum, F. Muell.
bifidum, F. Muell.
Spyridium subocreatum, Reissek.
vexilliferum, Reissek.
eriocephalum, Fenzl.
Stenanthemum leucophractum, Reissek.
Waterhousii, Benth.
Cryptandra hispidula, Reissek.
amara, Sm.
tomentosa, Lindl.

Intra-Tropical.

Ventilago viminalis, Hook.
Zizyphus Œnoplia, Mill.
Alphitonia excelsa, Reissek.

AMPELIDEÆ.

Indigenous in Australia, 14 Genera.
South Australia, 2 Genera.

Intra-Tropical.

Vitis cordata, Wall.
trifolia, Lin.
Leea sambucina, Willd.

SAPINDACEÆ.

Indigenous in Australia, 14 Genera.
South Australia, 4 Genera.

Extra-Tropical.

Heterodendron oleæfolium, Desf.
Dodonæa viscosa, Lin.
attenuata, A. Cunn.
procumbens, F. Muell.
lobulata, F. Muell.
bursarifolia, Behr.
Dodonæa Baueri, Endl.
hexandra, F. Muell.
humilis, Endl.
boraniæfolia, G. Don.
stenozyga, F. Muell.

Intra-Tropical.

Cardiospermum Halicacabum, Lin.
Schmidelia serrata, Dec.
Cupania anacardioides, A. Rich.
Dodonæa viscosa, Lin.
Distichostemon phyllopterus, F. Muell.

ANACARDIACEÆ.

Indigenous in Australia, 5 Genera.
South Australia, 2 Genera.

Intra-Tropical.

Buchanania angustifolia, Roxb. | Semecarpus Anacardium, Roxb.

LEGUMINOSÆ.

Indigenous in Australia, 92 Genera.
South Australia, 57 Genera.

Extra-Tropical.

Isotropis Wheeleri, F. Muell.
Viminaria denudata, Sm.
Daviesia corymbosa, Sm.
ulicina, Sm.
genistifolia, A. Cunn
incrassata, Sm.
brevifolia, Lindl.
pectinata, Lindl.
Aotus villosa, Sm.
Phyllota Sturtii, Benth.
pleurandroides, F. Muell.
Brachysema Chambersii, F. Muell.
Pultenæa daphnoides, Wendl.
stricta, Sims.
mucronata, F. Muell.
pedunculata, Hook.
mollis, Lindl.
rigida, R. Br.
acerosa, R. Br.
vestita, R. Br.
laxiflora, Benth.
largiflorens, F. Muell.
densifolia, F. Muell.
villifera, Sieb.
involucrata, Benth.
prostrata, Benth.
canaliculata, F. Muell.
tenuifolia, R. Br.
Eutaxia empetrifolia, Schlecht.
Dillwynia hispida, Lindl.
floribunda, Sm.
cinerascens, R. Br.
patula, F. Muell.
Platylobium obtusangulum, Hook.
Bossiæa prostrata, R. Br.
riparia, A. Cunn.
Templetonia retusa, R. Br.
egena, Benth.
Hovea longifolia, R. Br.
Goodia lotifolia, Salisb.
Crotalaria Cunninghamii, R. Br.
dissitiflora, Benth.
Pentadynamis incana, R. Br.
Trigonella suavissima, Lindl.
Lotus corniculatus, Lin.
australis, Andr.
Psoralea eriantha, Benth.
patens, Lindl.
adscendens, F. Muell.
Indigofera viscosa, Lam.
brevidens, Benth.
australis, Willd.
Sesbania aculeata, Pers.
Clianthus Dampieri, A. Cunn.

Swainsona Greyana, Lindl.
galegifolia, R. Br.
phacoides, Benth.
Burkittii, F. Muell.
oligophylla, F. Muell.
campylantha. F. Muell.
procumbens, F. Muell.
phacifolia, F. Muell.
lessertiifolia, Dec.
microphylla, A. Gray.
laxa, R. Br.
Lespedeza lunata, Benth.
Glycine falcata, Benth.
clandestina, Wendl.
Latrobeana, Benth.
tabacina, Benth
Hardenbergia monophylla, Benth.
Kennedya prostrata, R. Br.
Vigna lanceolata, Benth.
Cassia eremophila, A. Cunn.
artemisioides, Gaud.
Sturtii, R. Br.
desolata, F. Muell.
Petalostyles labicheoides, R. Br.
Acacia continua, Benth.
spinescens, Benth.
colletioides, A. Cunn.
tetragonophylla, F. Muell.
rupicola, F. Muell.
rhigiophylla, F. Muell.
aneura, F. Muell.
stereophylla, Meisn.
oxycedrus, Sieb.
verticillata, Willd.
rigens, A. Cunn.
papyrocarpa, Benth.
calamifolia, Sweet.
armata, R. Br.
vomeriformis, A. Cunn.
obliqua, A. Cunn.
acinacea, Lindl.
lineata, A. Cunn.
anceps, Dec.
microcarpa, F. Muell.
montana, Benth.
verniciflua, A. Cunn.
dodonæifolia, Willd.
sentis, F. Muell
retinodes, Schlecht.
neriifolia, A. Cunn.
pycnantha, Benth.
notabilis, F. Muell.
salicina, Lindl.
prominens, A. Cunn.

Acacia brachybotrya, Benth.
Wattsiana, F. Muell.
myrtifolia, Willd.
sublanata, Benth.
homalophylla, A. Cunn.
Oswaldi, F. Muell.
stenophylla, A. Cunn.
Acacia farinosa, Lindl.
melanoxylon, R. Br.
longifolia, Willd.
Burkittii, F. Muell.
cyperophylla, F. Muell.
sclerophylla, Lindl.
decurrens, Willd.

Intra-Tropical.

Isotropis parviflora, Benth.
Burtonia subulata, Benth.
Jacksonia dilatata, Benth.
odontoclada, F. Muell.
vernicosa, F. Muell.
Crotalaria crispata, F. Muell.
linifolia, Lin.
Novæ Hollandiæ. Dec.
trifoliastrum, Willd.
dissitiflora, Benth.
Psoralea badocana, Benth.
pustulata, F. Muell.
leucantha, F. Muell.
Indigofera hirsuta, Lin.
saxicola, F. Muell.
linifolia, Retz.
viscosa, Lam.
cordifolia, Heyne
haplophylla, F. Muell.
trita, Lin.
Tephrosia juncea, R. Br.
porrecta, R. Br.
simplicifolia, F. Muell.
reticulata, R. Br.
crocea, R. Br.
polyzyga, F. Muell.
Stuartii, Benth.
eriocarpa, Benth.
filipes, Benth.
Sesbania grandiflora, Pers.
ægyptiaca, Pers.
Zornia diphylla, Pers.
Desmodium trichostachyum, Benth.
Muelleri, Benth.
biarticulatum, F. Muell.
Pycnospora hedysaroides, R. Br.
Uraria cylindracea, Benth.
lagopoides, Dec.
Alysicarpus rugosus, Dec.
Clitoria australis, Benth.
Glycine tomentosa, Benth.
Galactia tenuiflora, Willd.
Canavalia obtusifolia, Dec.
Phaseolus Mungo, Lin.
vulgaris, Lin.
Vigna vexillata, Benth.
lutea, A. Gray.
lanceolata, Benth.
Erythrina vespertilio, Benth.
Atylosia grandifolia, F. Muell.
Atylosia cinerea, F. Muell.
Rhynchosia rhomboidea, F. Muell.
australis, Benth.
minima, Dec.
Eriosema chinense, Vog.
Flemingia pauciflora, Benth.
lineata, Roxb.
Abrus precatorius, Lin.
Dalbergia densa, Benth.
Pongamia glabra, Vent.
Peltophorum ferrugineum, Benth.
Guilandina Bonducella, Lin.
Cassia Absus, Lin.
chamæcrista, Lin.
suffruticosa, Koen.
venusta, F. Muell.
notabilis, F. Muell.
oligoclada, F. Muell.
leptoclada, Benth.
Bauhinia Hookeri, F. Muell.
Erythrophlœum Laboucherii, F. Muell.
Dichrostachys cinerea, W. & Arn.
Muelleri, Benth.
Neptunia gracilis, Benth.
Acacia crassicarpa, A. Cunn.
Cunninghamii, Hook.
dimidiata, Benth.
holosericea, A. Cunn.
latescens, Benth.
loxocarpa, Benth.
pilifera, Benth.
polystachya, Benth.
Simsii, A. Cunn.
tumida, F. Muell.
patens, F. Muell.
Baueri, Benth.
hemignosta, F. Muell.
Wickhami, Benth.
lysiphlœa, F. Muell.
linarioides, Benth.
umbellata, A. Cunn.
xylocarpa, A. Cunn.
conspersa, F. Muell.
torulosa, Benth.
plectocarpa, A. Cunn.
tumida, F. Muell.
latifolia, Benth.
humifusa, A. Cunn.
farnesiana, Willd.

ROSACEÆ.

Indigenous in Australia, 7 Genera.
South Australia, 5 Genera.

Extra-Tropical.

Rubus parvifolius, Lin.
Alchemilla arvensis, Scop.
Acæna ovina, A. Cunn.
Sanguisorbæ, Vahl.

Intra-Tropical.

Parinarium Griffithianum, Benth.
Nonda, F. Muell.
Rubus moluccanus, Lin.

SAXIFRAGEÆ.

Indigenous in Australia, 20 Genera.
No representative in South Australia.

CRASSULACEÆ.

Indigenous in Australia, 1 Genus.
South Australia, 1 Genus.

Extra-Tropical.

Tillæa verticillaris, Dec.
macrantha, Hook.
Tillæa recurva, Hook.

DROSERACEÆ.

Indigenous in Australia, 2 Genera.
South Australia, 1 Genus.

Extra-Tropical.

Drosera glanduligera, Lehm.
pygmæa, Dec.
binata, Labill.
Drosera Whittakerii, Planch
auriculata, Backh.
Menziesii, R. Br.

Intra-Tropical.

Drosera indica, Lin.
Drosera petiolaris, R. Br.

HALORAGEÆ.

Indigenous in Australia, 7 Genera.
South Australia, 6 Genera.

Extra-Tropical.

Loudonia aurea, Lindl.
Behrii, Schlecht.
Haloragis mucronata, Benth.
Gossei, F. Muell.
elata, A. Cunn.
ceratophylla, Endl.
acutangula, F. Muell.
micrantha, R. Br.
heterophylla, Brongn.
tetragyna, Hook.
Haloragis teucrioides, A. Gray.
Meionectes Brownii, Hook.
Myriophyllum variæfolium, Hook.
elatinoides, Gaud.
verrucosum, Lindl.
Muelleri, Sond.
integrifolium, Hook.
Ceratophyllum demersum, Lin.
Callitriche verna, Lin.

Intra-Tropical.

Haloragis acanthocarpa, Brongn.

RHIZOPHOREÆ.

Indigenous in Australia, 4 Genera.
South Australia, 4 Genera.

Intra-Tropical.

Rhizophora mucronata, Lam.
Ceriops Candolleana, Arn.
Bruguiera Rheedii, Blum.
Carallia integerrima, Dec.

COMBRETACEÆ.

Indigenous in Australia, 4 Genera.
South Australia, 3 Genera.

Intra-Tropical.

Terminalia platyptera, F. Muell.
volucris, R. Br.
bursarina, F. Muell.
circumalata, F. Muell.
Terminalia platyphylla, F. Muell.
grandiflora, Benth.
Macropteranthes Kekwickii, F. Muell.

MYRTACEÆ.

Indigenous in Australia, 42 Genera.
South Australia, 18 Genera.

Extra-Tropical.

Darwinia micropetala, Benth.
Schuermanni, Benth.
Verticordia Wilhelmii, F. Muell.
Calythrix tetragona, Labill.
Lhotzkya glaberrima, F. Muell.
genetylloides, F. Muell.
Thryptomene Miqueliana, F. Muell.
ericæa, F. Muell.
Elliottii, F. Muell.
Maisonneuvii, F. Muell.
Micromyrtus microphylla, Benth.
Bæckea crassifolia, Lindl.
Behrii, F. Muell.
Leptospermum lævigatum, F. Muell.
scoparium, Forst.
lanigerum, Sm.
myrsinoides, Schlecht.
Kunzea pomifera, F. Muell.
Callistemon coccineus, F. Muell.
salignus, Dec.
teretifolius, F. Muell.
brachyandrus, Lindl.
Melaleuca acuminata, F. Muell.
decussata, R. Br.
Wilsonii, F. Muell.
Preissiana, Schau.
armillaris, Sm.
Melaleuca uncinata, R. Br.
glomerata, F. Muell.
squamea, Labill.
lasiandra, F. Muell.
linophylla, F. Muell.
Eucalyptus virgata, Sieb.
obliqua, Lher.
capitellata, Sm.
leucoxylon, F. Muell.
gracilis, F. Muell.
paniculata, Sm.
bicolor, A. Cunn.
odorata, Behr.
uncinata, Turcz.
hemiphloia, F. Muell.
cneorifolia, Dec.
corynocalyx, F. Muell.
brachypoda, Turcz.
cosmophylla, F. Muell.
dumosa, A. Cunn.
incrassata, Labill.
viminalis, Labill.
rostrata, Schlecht.
Stuartiana, F. Muell.
oleosa, F. Muell.
fœcunda, Schau.

Intra-Tropical.

Verticordia Cunninghamii, Schau.
Calythrix microphylla, A. Cunn.
conferta, A. Cunn.
arborescens, F. Muell.
laricina, R. Br.
Thryptomene Maisonneuvii, F. Muell.
Leptospermum abnorme, F. Muell.
Melaleuca acacioides, F. Muell.
symphyocarpa, F. Muell.
leucadendron, Lin.
genistifolia, Sm.
dissitiflora, F. Muell.
Eucalyptus miniata, A. Cunn.
platyphylla, F. Muell.
corymbosa, Sm.
terminalis, F. Muell.
clavigera, A. Cunn.
grandifolia, R. Br.
pruinosa, Schau.
Eucalyptus crebra, F. Muell.
brachypoda, Turcz.
patellaris, F. Muell.
tesselaris, F. Muell.
phœnicea, F. Muell.
latifolia, F. Muell.
ptychocarpa, F. Muell.
dichromophloia, F. Muell.
terminalis, F. Muell.
tetrodonta, F. Muell.
Tristania lactiflua, F. Muell.
Xanthostemon paradoxus, F. Muell.
Osbornia octodonta, F. Muell.
Eugenia Smithii, Poir.
eucalyptoides, F. Muell.
Armstrongii, Benth.
Barringtonia acutangula, Gaertn.
Careya arborea, Roxb.

MELASTOMACEÆ.

Indigenous in Australia, 4 Genera.
South Australia, 2 Genera.

Intra-Tropical.

Osbeckia australiana, Naud. | Melastoma malabathricum, Lin.

LYTHRARIEÆ.

Indigenous in Australia, 5 Genera.
South Australia, 3 Genera.

Extra-Tropical.

Ammannia indica, Lam.
Lythrum Salicaria, Lin. | Lythrum hyssopifolium, Lin.

Intra-Tropical.

Ammannia Rotala, F. Muell.
pentandra, Roxb. | Ammannia indica, Lam.
Lythrum arnhemicum, F. Muell.

ONAGRARIEÆ.

Indigenous in Australia, 4 Genera.
South Australia, 2 Genera.

Extra-Tropical.

Epilobium junceum, Forst.
glabellum, Forst.
tetragonum, Lin. | Epilobium pallidiflorum, Soland.
Jussiæa repens, Lin.

Intra-Tropical.

Jussiæa suffruticosa, Lin. | Ludwigia parviflora, Roxb.

SAMYDACEÆ.

Indigenous in Australia, 2 Genera.
No representative in South Australia.

PASSIFLOREÆ.

Indigenous in Australia, 2 Genera.
South Australia, 1 Genus.

Intra-Tropical.

Modecca australis, R. Br.

CUCURBITACEÆ.

Indigenous in Australia, 9 Genera.
South Australia, 6 Genera.

Intra-Tropical.

Trichosanthes cucumerina, Lin.
Luffa ægyptiaca, Mill.
graveolens, Roxb.
Cucumis trigonus, Roxb. | Bryonia laciniosa, Lin.
Melothria Cunninghamii, F. Muell.
Mukia scabrella, Arn.

FICOIDEÆ.

Indigenous in Australia, 8 Genera.
South Australia, 7 Genera.

Mesembryanthemum æquilaterale, Haw.
australe, Soland.
crystallinum, Lin.
Tetragonia expansa, Murr. | Tetragonia implexicome, Hook.
Aizoon quadrifidum, F. Muell.
Gunnia septifraga, F. Muell.
Mollugo orygioides, F. Muell.
Cerviana, Ser.

Intra-Tropical.

Sesuvium portulacastrum, Lin.
Trianthema crystallina, Vahl.
pilosa, F. Muell.
Trianthema rhynchocalyptra, F. Muell.
Mollugo trigastrotheca, F. Muell.

UMBELLIFERÆ.

Indigenous in Australia, 13 Genera.
South Australia, 7 Genera.

Extra-Tropical.

Hydrocotyle vulgaris, Lin.
hirta, R. Br.
laxiflora, Dec.
callicarpa, Bunge.
capillaris, F. Muell.
asiatica, Lin.
Trachymene australis, Benth.
pilosa, Sm.
eriocarpa, Benth.
Trachymene glaucifolia, Benth.
Xanthosia pusilla, Bunge.
dissecta, Hook.
Eryngium rostratum, Cav.
vesiculosum, Labill.
Apium australe, Thou.
Crantzia lineata, Nutt.
Daucus brachiatus, Sieb.

Intra-Tropical.

Hydrocotyle grammatocarpa, F. Muell.
Trachymene villosa, Benth.
Trachymene glandulosa, Benth.
hemicarpa, Benth.

ARALIACEÆ.

Indigenous in Australia, 6 Genera.
No representative in South Australia.

CORNACEÆ.

Indigenous in Australia, 1 Genus.
No representative in South Australia.

LORANTHACEÆ.

Indigenous in Australia, 5 Genera.
South Australia, 2 Genera.

Extra-Tropical.

Loranthus angustifolius, R. Br.
linearifolius, Hook.
Exocarpi, Behr.
linophyllus, Fenzl.
Loranthus pendulus, Sieb.
Quandang, Lindl.
grandibracteus, F. Muell.
Viscum articulatum, Burm.

Intra-Tropical.

Loranthus celastroides, Sieb.
longiflorus, Desv.
pendulus, Sieb.
Exocarpi, Behr.
Loranthus signatus, F. Muell.
Quandang, Lindl.
grandibracteus, F. Muell.
Viscum angulatum, Heyne.

CAPRIFOLIACEÆ.

Indigenous in Australia, 1 Genus.

Extra-Tropical.

Sambucus Gaudichaudiana, Dec.

RUBIACEÆ.

Indigenous in Australia, 29 Genera.
South Australia, 7 Genera.

Extra-Tropical.

Hedyotis tillæacea, F. Muell.
Dentella repens, Forst.
Canthium latifolium, F. Muell.
Opercularia scabrida, Schlecht.
hispida, Spreng.
ovata, Hook.
varia, Hook.
Opercularia umbellata, Gaert.
Asperula scoparia, Hook.
Galium geminifolium, F. Muell.
Gaudichaudi, Dec.
australe, Dec.
Aparine, Lin.

Intra-Tropical.

Hedyotis Auricularia, Lin.
pterospora, F. Muell.
Dentella repens, Forst.
Knoxia corymbosa, Willd.
Gardenia megasperma, F. Muell.
suffruticosa, R. Br.
Randia densiflora, Benth.
Ixora timorensis, Dec.
tomentosa, Roxb.
coccinea, Lin.
Timonius Rumphii, Dec.
Guettarda speciosa, Lin.
Canthium lucidum, Hook.
coprosmoides, F. Muell.
Coclospermum reticulatum, Benth.
Psychotria nesophila, F. Muell.
Spermacoce breviflora, F. Muell.
exserta, Benth.
leptoloba, Benth.
brachystema, R. Br.
membranacea, R. Br.
marginata, Benth.
auriculata, F. Muell.
Scyphiphora hydrophylacea, Gaert.

COMPOSITÆ.

Indigenous in Australia, 94 Genera.
South Australia, 66 Genera.

Extra-Tropical.

Adenostemma viscosum, Forst.
Olearia grandiflora, Hook.
pannosa, Hook.
stellulata, Dec.
tubuliflora, Benth.
ramulosa, Benth.
floribunda, Benth.
lepidophylla, Benth.
pimeleoides, Benth.
conocephala, F. Muell.
Muelleri, Benth.
Stuartii, F. Muell.
decurrens, Benth.
glutinosa, Benth.
teretifolia, F. Muell.
glandulosa, Benth.
rudis, F. Muell.
picridifolia, Benth.
ciliata, F. Muell.
Vittadinia australis, A. Rich.
Podocoma cuneifolia, R. Br.
Erigeron linifolius, Willd.
Minuria leptophylla, Dec.
Candollei, F. Muell.
Cunninghamii, Benth.
integerrima, Benth.
Minuria denticulata, Benth.
suædifolia, F. Muell.
Calotis cuneifolia, R. Br.
cymbacantha, F. Muell.
erinacea, Steetz.
scabiosifolia, Sond.
scapigera, Hook.
lappulacea, Benth.
plumulifera, F. Muell.
porphyroglossa, F. Muell.
hispidula, F. Muell.
dentex, R. Br.
Lagenophora Billardieri, Cass.
Huegelii, Benth.
Brachycome diversifolia, Fisch.
goniocarpa, Sond.
pachyptera, Turcz.
Muelleri, Sond.
graminea, F. Muell.
basaltica, F. Muell.
trachycarpa, F. Muell.
exilis, Sond.
debilis, Sond.
decipiens, Hook.
cardiocarpa, F. Muell.
ciliaris, Less.

Brachycome calocarpa, F. Muell.
collina, Benth.
Monenteles sphacelatus, Labill.
Pluchea Eyrea, F. Muell.
Epaltes australis, Less.
Siegesbeckia orientalis, Lin.
Eclipta platyglossa, F. Muell.
Glossogyne tenuifolia, Cass.
Cotula filifolia, Thunb.
coronopifolia, Lin.
australis, Hook.
reptans, Benth.
Myriogyne minuta, Less.
Blachanthus pusillus, F. Muell.
Myriocephalus rhizocephalus, Benth.
Rudallii, Benth.
Stuartii, Benth.
Angianthus tomentosus, Wendl.
pleuropappus, Benth.
brachypappus, F. Muell.
pusillus, Benth.
Preissianus, Benth.
strictus, Benth.
Gnephosis Burkittii, Benth.
skirrophora, Benth.
arachnoidea, Turcz.
Calocephalus Brownii, F. Muell.
Sonderi, F. Muell.
lacteus, Less.
citreus, Less.
platycephalus, Benth.
Cephalipterum Drummondii, A. Gray.
Gnaphalodes uliginosum, A. Gray.
Craspedia Richea, Cass.
pleiocephala, F. Muell.
chrysantha, Benth.
globosa, Benth.
Chthonocephalus pseudoevax, Steetz.
Ixodia achilleoides, R. Br.
Cassinia aculeata, R. Br.
lævis, R. Br.
aculeata, R. Br.
spectabilis, R. Br.
Eriochlamys Behrii, Sond.
Toxanthus perpusillus, Turcz.
Muelleri, Benth.
Rutidosis helichrysoides, Dec.
Pumilo, Benth.
Millotia tenuifolia, Cass.
Ixiolæna leptolepis, Benth.
supina, F. Muell.
tomentosa, Sond.
Athrixia tenella, Benth.
Podotheca angustifolia, Cass.
Podolepis acuminata, R. Br.
canescens, A. Cunn.
rugata, Labill.
Lessoni, Benth.
Siemssenia, F. Muell.
pallida, Turcz.
Leptorhynchus squamatus, Less.
ambiguus, Benth.
pulchellus, F. Muell.
elongatus, Dec.
Waitzia, Sond.
Schœnia Cassiniana, Steetz.
Helichrysum Lawrencella, F. Muell.
Cotula, Dec.
Baxteri, A. Cunn.
scorpioides, Labill.
rutidolepis, Dec.
obtusifolium, F. Muell.
bracteatum, Willd.
leucopsidium, Dec.
Blandowskianum, Steetz.
podolepideum, F. Muell.
apiculatum, Dec.
adnatum, Benth.
ferrugineum, Less.
Waitzia corymbosa, Wendl.
Helipterum anthemoides, Dec.
polygalifolium, Dec.
floribundum, Dec.
stipitatum, F. Muell.
incanum, Dec.
hyalospermum, F. Muell.
strictum, Benth.
corymbiflorum, Schlecht.
pygmæum, Benth.
moschatum, Benth.
pterochætum, Benth.
exiguum, F. Muell.
dimorpholepis, Benth.
Gnaphalium luteo-album, Lin.
japonicum, Thunb.
indutum, Hook.
Stuartina Muelleri, Sond.
Erechthites arguta, Dec.
mixta, Dec.
quadridentata, Dec.
hispidula, Dec.
Senecio Gregorii, F. Muell.
megaglossus, F. Muell.
magnificus, F. Muell.
lautus, Forst.
australis, Willd.
Behrianus, Sond.
brachyglossus, F. Muell.
odoratus, Hornem.
Cunninghamii, Dec.
hypoleucus, F. Muell.
velleioides, A. Cunn.
Cymbonotus Lawsonianus, Gaudich.
Microseris Forsteri, Hook.
Hypochæris glabra, Lin.
Picris hieracioides, Lin.
Sonchus oleraceus, Lin.
Erodiophyllum Elderi, F. Muell.
Pterigeron densatifolius, F. Muell.

Intra-Tropical.

Vernonia cinerea, Less.
Pleurocarpæa denticulata, Benth.
Elephantopus scaber, Lin.
Vittadinia brachycomoides, F. Muell.
macrorhiza, A. Gray.
Calotis breviseta, Benth.
Sphæranthus hirtus, Willd.
microcephalus, Willd.
Monenteles sphacelatus, Labill.
sphæranthoides, Dec.
Blumea integrifolia, Dec.
diffusa, R. Br.
Cunninghamii, Dec.
Pluchea indica, Less.
Eyrea, F. Muell.
Epaltes australis, Less.
Pterigeron filifolius, Benth.
Pterigeron macrocephalus, Benth.
odorus, Benth.
Coleocoma centaurea, F. Muell.
Thespidium basiflorum, F. Muell.
Eclipta platyglossa, F. Muell.
Wedelia verbesinoides, F. Muell.
biflora, Dec.
Moonia ecliptoides, Benth.
procumbens, Benth.
Spilanthes grandiflora, Turez.
Bidens bipinnata, Lin.
Glossogyne tenuifolia, Cass.
Flaveria australasica, Hook.
Myriogyne minuta, Less.
Rutidosis Brownii, Benth.
Helichrysum bracteatum, Willd.
apiculatum, Dec.

STYLIDIEÆ.

Indigenous in Australia, 3 Genera.
South Australia, 2 Genera.

Extra-Tropical.

Stylidium graminifolium, Swartz.
cæspitosum, R. Br.
calcaratum, R. Br.
Stylidium despectum, R. Br.
Levenhookia dubia, Sond.

Intra-Tropical.

Stylidium Floodii, F. Muell.
floribundum, R. Br.
leptorhizum, F. Muell.
Stylidium alsinoides, R. Br.
schizanthum, F. Muell.
pedunculatum, R. Br.

GOODENOVIEÆ.

Indigenous in Australia, 12 Genera.
South Australia, 8 Genera.

Extra-Tropical.

Leschenaultia divaricata, F. Muell.
Velleia connata, F. Muell.
paradoxa, R. Br.
Goodenia ovata, Sm.
amplexans, F. Muell.
varia, R. Br.
cærulea, R. Br.
geniculata, R. Br.
hirsuta, F. Muell.
calcarata, F. Muell.
Nicholsoni, F. Muell.
grandiflora, Sims.
Mitchellii, Benth.
Chambersii, F. Muell.
albiflora, Schlecht.
cycloptera, R. Br.
Goodenia pinnatifida, Schlecht.
glauca, F. Muell.
Selliera radicans, Cav.
Scævola spinescens, R. Br.
depauperata, R. Br.
collaris, F. Muell.
suaveolens, R. Br.
ovalifolia, R. Br.
crassifolia, Labill.
æmula, R. Br.
humilis, R. Br.
microcarpa, Cav.
linearis, R. Br.
Dampiera rosmarinifolia, Schlecht.
Brunonia australis, Sm.

Intra-Tropical.

Goodenia Armstrongiana, Dec.
pumilio, R. Br.
purpurascens, R. Br.
sepalosa, F. Muell.
Goodenia azurea, F. Muell.
heterochila, F. Muell.
hispida, R. Br.
auriculata, Benth.

Goodenia coronopifolia, R. Br.
microptera, F. Muell.
lamprosperma, F. Muell.
Calogyne pilosa, R. Br.
Scævola Kœnigii, Vahl.
Scævola Cunninghamii, Dec.
angulata, R. Br.
revoluta, R. Br.
ovalifolia, R. Br.

ERICACEÆ.

Indigenous in Australia, 3 Genera.
No representative in South Australia.

CAMPANULACEÆ.

Indigenous in Australia, 4 Genera.
South Australia, 4 Genera.

Extra-Tropical.

Lobelia gibbosa, Labill.
rhombifolia, Vr.
anceps, Thunb.
pratioides, Benth.
Lobelia heterophylla, Labill.
Pratia puberula, Benth.
Isotoma petræa, F. Muell.
Wahlenbergia gracilis, A. Dec.

Intra-Tropical.

Lobelia membranacea, R. Br.
stenophylla, Benth.
quadrangularis, R. Br.
Lobelia dioica, R. Br.
Wahlenbergia gracilis, A. Dec.

EPACRIDEÆ.

Indigenous in Australia, 24 Genera.
South Australia, 8 Genera.

Extra-Tropical.

Styphelia pusilliflora, F. Muell.
Astroloma humifusum, R. Br.
conostephioides, F. Muell.
Brachyloma ericoides, Sond.
daphnoides, Benth.
Lissanthe strigosa, R. Br.
Leucopogon Richei, R. Br.
australis, R. Br.
virgatus, R. Br.
Leucopogon ericoides, R. Br.
cordifolius, Lindl.
hirtellus, F. Muell.
rufus, Lindl.
Woodsii, F. Muell.
Acrotriche serrulata, R. Br.
ovalifolia, R. Br.
Epacris impressa, Labill.
Sprengelia incarnata, Sm.

PLUMBAGINEÆ.

Indigenous in Australia, 3 Genera.
South Australia, 2 Genera.

Intra-Tropical.

Plumbago zeylanica, Lin.
Acgialitis annulata, R. Br.

PRIMULACEÆ.

Indigenous in Australia, 3 Genera.
South Australia, 2 Genera.

Extra-Tropical.

Anagallis arvensis, Lin.
Samolus repens, Pers.

MYRSINEÆ.

Indigenous in Australia, 5 Genera.
South Australia, 1 Genus.

Intra-Tropical.

Ægiceras majus, Gaertn.

SAPOTACEÆ.

Indigenous in Australia, 5 Genera.
South Australia, 3 Genera.

Sersalisia sericea, R. Br.
Achras myrsinoides, A. Cunn.
Mimusops parvifolia, R. Br.

EBENACEÆ.

Indigenous in Australia, 3 Genera.
South Australia, 3 Genera.

Intra-Tropical.

Diospyros cordifolia, Roxb.
Cargilia laxa, R. Br.
Maba humilis, R. Br.

STYRACACEÆ.

Indigenous in Australia, 1 Genus.
No representative in South Australia.

JASMINEÆ.

Indigenous in Australia, 5 Genera.
South Australia, 2 Genera.

Intra-Tropical.

Jasminum didymum, Forst.
lineare, R. Br.
simplicifolium, Forst.
Jasminum æmulum, R. Br.
Notelæa microcarpa, R. Br.

APOCYNEÆ.

Indigenous in Australia, 12 Genera.
South Australia, 6 Genera.

Extra-Tropical.

Alyxia buxifolia, R. Br.

Intra-Tropical.

Carissa lanceolata, R. Br.
Alyxia spicata, R. Br.
thyrsiflora, Benth.
Tabernæmontana orientalis, R. Br.
pubescens, R. Br.
Alstonia verticillosa, F. Muell.
Wrightia pubescens, R. Br.
saligna, F. Muell.
Parsonsia velutina, R. Br.

ASCLEPIADEÆ.

Indigenous in Australia, 14 Genera.
South Australia, 9 Genera.

Extra-Tropical.

Sarcostemma australe, R. Br.
Cynanchum floribundum, R. Br.
Marsdenia Leichardtiana, F. Muell.

Intra-Tropical.

Gymnanthera nitida, R. Br.
Secamone elliptica, R. Br.
Sarcostemma australe, R. Br.
Vincetoxicum carnosum, Benth.
Cynanchum pedunculatum, R. Br.
floribundum, R. Br.
Tylophora macrophylla, Benth.
Tylophora flexuosa, R. Br.
Marsdenia cinerascens, R. Br.
velutina, R. Br.
Hullsii, F. Muell.
Gymnema stenophyllum, A. Gray.
sylvestre, R. Br.
Hoya Nicholsoniæ, F. Muell.

LOGANIACEÆ.

Indigenous in Australia, 6 Genera.
South Australia, 4 Genera.

Extra-Tropical.

Mitrasacme paradoxa, R. Br.
Logania longifolia, R. Br.
crassifolia, R. Br.
Logania onata, R. Br.
linifolia, Schlecht.

Intra-Tropical.

Mitrasacme stellata, R. Br.
tenuiflora, Benth.
lutea, F. Muell.
longiflora, F. Muell.
lævis, Benth.
indica, Wight.
Mitrasacme connata, R. Br.
elata, R. Br.
laricifolia, R. Br.
Fagræa racemosa, Jack.
Strychnos lucida, R. Br.
psilosperma, F. Muell.

GENTIANEÆ.

Indigenous in Australia, 7 Genera.
South Australia, 5 Genera.

Extra-Tropical.

Sebæa ovata, R. Br.
Erythræa australis, R. Br.
Gentiana montana, Forst.
Villarsia reniformis, R. Br.

Intra-Tropical.

Erythræa australis, R. Br.
Canscora diffusa, R. Br.
Limnanthemum geminatum. Griseb.
indicum, Thw.

HYDROPHYLLACEÆ.

Indigenous in Australia, 1 Genus.
South Australia, 1 Genus.

Intra-Tropical.

Hydrolea zeylanica, Vahl.

BORAGINEÆ.

Indigenous in Australia, 12 Genera.
South Australia, 10 Genera.

Extra-Tropical.

Coldenia procumbens, Lin.
Heliotropium curassavicum, Lin.
europæum, Lin.
undulatum, Vahl.
asperrimum, R. Br.
ovalifolium, Forsk.
pleiopterum, F. Muell.
Heliotropium filaginoides, Benth.
Halgania strigosa, Schlecht.
Trichodesma zeylanicum, R. Br.
Myosotis australis, R. Br.
Eritrichium australasicum, A. Dec.
Echinospermum concavum, F. Muell.

Intra-Tropical.

Cordia Myxa, Lin.
subcordata, Lam.
Ehretia acuminata, R. Br.
saligna, R. Br.
Tournefortia argentea, Lin.
Coldenia procumbens, Lin.
Heliotropium fasciculatum, R. Br.
ovalifolium, Forsk.
Heliotropium prostratum, R. Br.
ventricosum, R. Br.
pauciflorum, R. Br.
tenuifolium, R. Br.
paniculatum, R. Br.
diversifolium, F. Muell.
Trichodesma zeylanicum, R. Br.

CONVOLVULACEÆ.

Indigenous in Australia, 11 Genera.
South Australia, 8 Genera.

Extra-Tropical.

Ipomœa costata, F. Muell.
Convolvulus erubescens, Sims.
Cressa cretica, Lin.
Evolvulus alsinoides, Lin.
Dichondra repens, Forst.
Wilsonia humilis, R. Br.
rotundifolia, Hook.

Intra-Tropical.

Ipomœa alata, R. Br.
angustifolia, Jacq.
eriocarpa, R. Br.
dissecta, Willd.
diversifolia, R. Br.
flava, F. Muell.
pes-capræ, Roth.
sessiliflora, Roth.
paniculata, R. Br.
quinata, R. Br.
hederacea, Jacq.
longiflora, R. Br.
carnosa, R. Br.
reptans, Poir.
abrupta, R. Br.
Ipomœa gracilis, R. Br.
Muelleri, Benth.
incisa, R. Br.
heterophylla, R. Br.
erecta, R. Br.
Convolvulus parviflorus, Vahl.
Polymeria angusta, F. Muell.
ambigua, R. Br.
Breweria linearis, R. Br.
media, R. Br.
brevifolia, Benth.
pannosa, R. Br.
Cressa cretica, Lin.
Evolvulus alsinoides, Lin.
Dichondra repens, Forst.

SOLANEÆ.

Indigenous in Australia, 7 Genera.
South Australia, 3 Genera.

Extra-Tropical.

Solanum nigrum, Lin.
aviculare, Forst.
simile, F. Muell.
oligacanthum, F. Muell.
esuriale, Lindl.
Solanum chenopodinum, F. Muell.
Sturtianum, F. Muell.
hystrix, R. Br.
petrophilum, F. Muell.

Intra-Tropical.

Solanum nigrum, Lin.
tetrandrum, R. Br.
discolor, R. Br.
esuriale, Lindl.
diversiflorum, F. Muell.
horridum, Dun.
Solanum quadriloculatum, F. Muell.
ellipticum, R. Br.
Physalis minima, Lin.
peruviana, Lin.
Nicotiana suaveolens, Lehm.

SCROPHULARINEÆ.

Indigenous in Australia, 30 Genera.
South Australia, 15 Genera.

Extra-Tropical.

Anthocercis anisantha, Endl.
angustifolia, F. Muell.
Eadesii, F. Muell.
Mimulus repens, R. Br.
prostratus, Benth.
Morgania floribunda, Benth.
Gratiola peruviana, Lin.
Limosella aquatica, Lin.
Veronica decorosa, F. Muell.
Derwentia, Andr.
gracilis, R. Br.
distans, R. Br.
calycina, R. Br.
Euphrasia collina, R. Br.
scabra, R. Br.

Intra-Tropical.

Adenosma Muelleri, Benth.
Stemodia viscosa, Roxb.
debilis, Benth.
Morgania glabra, R. Br.
Limnophila gratioloides, R. Br.
punctata, Blume.
hirsuta, Benth.
serrata, Gaudich.
Vandellia pubescens, Benth.
Vandellia subulata, Benth.
Centranthera hispida, R. Br.
Buchnera tetragona, R. Br.
urticifolia, R. Br.
linearis, R. Br.
tenella, R. Br.
Striga curviflora, Benth.
multiflora, Benth.
Hemiarrhena plantaginea, Benth.

LENTIBULARIEÆ.

Indigenous in Australia, 2 Genera.
South Australia, 1 Genus.

Intra-Tropical.

Utricularia stellaris, Lin.
fulva, F. Muell.
Utricularia chrysantha, R. Br.
exoleta, R. Br.

OROBANCHACEÆ.

Indigenous in Australia, 1 Genus.
South Australia, 1 Genus.

Extra-Tropical.

Orobanche cernua, Loefl.

GESNERIACEÆ.

Indigenous in Australia, 2 Genera.
No representative in South Australia.

BIGNONIACEÆ.

Indigenous in Australia, 4 Genera.
South Australia, 1 Genus.

Intra-Tropical.

Spathodea filiformis, Dec.
Spathodea heterophylla, R. Br.

ACANTHACEÆ.

Indigenous in Australia, 11 Genera.
South Australia, 7 Genera.

Extra-Tropical.

Justicia procumbens, Lin.

Intra-Tropical.

Nelsonia campestris, R. Br.
Hygrophila salicifolia, Nees.
Ruellia acaulis, R. Br.
Acanthus ilicifolius, Lin.
Justicia procumbens, Lin.
Dicliptera glabra, Dec.
Hypoestes floribunda, R. Br.

PEDALINEÆ.

Indigenous in Australia, 1 Genus.
South Australia, 1 Genus.

Extra-Tropical.

Josephinia Eugeniæ, F. Muell.

Intra-Tropical.

Josephinia imperatricis, Vent.

MYOPORINEÆ.

Indigenous in Australia, 13 Genera.
South Australia, 3 Genera.

Extra-Tropical.

Myoporum serratum, R. Br.
deserti, A. Cunn.
parvifolium, R. Br.
platycarpum, R. Br.
Pholidia Dalyana, F. Muell.
scoparia, R. Br.
crassifolia, F. Muell.
Behriana, F. Muell.
gibbifolia, F. Muell.
divaricata, F. Muell.
santalina, F. Muell.
Eremophila rotundifolia, F. Muell.
oppositifolia, R. Br.
Paisleyi, F. Muell.

Eremophila Sturtii, R. Br.
Christophori, F. Muell.
Latrobei. F. Muell.
Macdonellii. F. Muell.
longifolia, F. Muell.
polyclada, F. Muell.
Freelingii, F. Muell.
Goodwinii, F. Muell.
Brownii, F. Muell.
scoparia, F. Muell.
Duttoni, F. Muell.
maculata, F. Muell.
latifolia, F. Muell.
alternifolia, R. Br.

Intra-Tropical.

Eremophila Latrobei, F. Muell.
longifolia, F. Muell.

Eremophila Willsii, F. Muell.

SELAGINEÆ.

Indigenous in Australia, 1 Genus.
No representative in South Australia.

VERBENACEÆ.

Indigenous in Australia, 20 Genera.
South Australia, 8 Genera.

Extra-Tropical.

Verbena officinalis, Lin.
Clerodendron floribundum, R. Br.

Avicennia officinalis, Lin.

Intra-Tropical.

Dicrastyles ochrotricha, F. Muell.
Denisonia ternifolia, F. Muell.
Premna obtusifolia, R. Br.
integrifolia, Lin.
acuminata, R. Br.
Clerodendron inerme, R. Br.
floribundum, R. Br.

Clerodendron Cunninghamii, Benth.
Gmelina macrophylla, Benth.
Vitex trifolia, Lin.
acuminata, R. Br.
glabrata, R. Br.
Avicennia officinalis, Lin.

LABIATÆ.

Indigenous in Australia, 21 Genera.
South Australia, 15 Genera.

Extra-Tropical.

Mentha australis, B. Br.
gracilis, B. Br.
serpyllifolia, Benth.
grandiflora, Benth.
satureioides, R. Br.
Lycopus australis, R. Br.
Prunella vulgaris, Lin.
Scutellaria humilis, R. Br.
Prostanthera rotundifolia, R. Br.
spinosa, F. Muell.
Behriana, Schlecht.

Prostanthera striatiflora, F. Muell.
eurybioides, F. Muell.
microphylla, A. Cunn.
aspalathoides, A. Cunn.
calycina, F. Muell.
chlorantha, F. Muell.
Westringia rigida, R. Br.
Teucrium racemosum, R. Br.
corymbosum, R. Br.
sessiliflorum, Benth.
Ajuga australis, R. Br.

Intra-Tropical.

Ocimum sanctum, Lin.
Moschosma australe, Benth.
Plectranthus parviflorus, Willd.
Coleus scutellarioides, Benth.
Hyptis suaveolens, Poit.
Dysophylla verticillata, Benth.
Anisomeles salvifolia, R. Br.

PLANTAGINEÆ.

Indigenous in Australia, 8 Genera.
South Australia, 1 Genus.

Extra-Tropical.

Plantago coronopus, Lin.
Plantago varia, R. Br.

PHYTOLACCACEÆ.

Indigenous in Australia, 5 Genera.
South Australia, 3 Genera.

Extra-Tropical.

Didymotheca thesioides, Hook.
Gyrostemon cyclotheca, Benth.
Codonocarpus pyramidalis, F. Muell.
cotinifolius, F. Muell.

Intra-Tropical.

Gyrostemon ramulosus, Desf.

CHENOPODIACEÆ.

Indigenous in Australia, 15 Genera.
South Australia, 13 Genera.

Extra-Tropical.

Rhagodia Billardieri, R. Br.
parabolica, R. Br.
Gaudichaudiana, Miq.
crassifolia, R. Br.
spinescens, R. Br.
nutans, R. Br.
Chenopodium Nitrariacea, F. Muell.
microphyllum, F. Muell.
glaucum, Lin.
carinatum, R. Br.
pumilio, R. Br.
cristatum, F. Muell.
atriplicinum, F. Muell.
Dysphania littoralis, R. Br.
Atriplex stipitata, Benth.
paludosa, R. Br.
nummularia, Lindl.
cinerea, Poir.
incrassata, F. Muell.
vesicaria, Howard.
patula, Lin.
velutinella, F. Muell.
fissivalve, F. Muell.
angulata, Benth.
semibaccata, R. Br.
Muelleri, Benth.
prostrata, R. Br.
pumilio, R. Br.
leptocarpa, F. Muell.
Atriplex halimoides, Lindl.
holocarpa, F. Muell.
spongiosa, F. Muell.
Enchylæna tomentosa, R. Br.
villosa, F. Muell.
Kochia lanosa, Lindl.
oppositifolia, F. Muell.
brevifolia, R. Br.
eriantha, F. Muell.
villosa, Lindl.
sedifolia, F. Muell.
appressa, Benth.
aphylla, R. Br.
ciliata, F. Muell.
brachyptera, F. Muell.
Chenolea, sclerolænoides, F. Muell.
Babbagia dipterocarpa, F. Muell.
Sclerolæna uniflora, R. Br.
diacantha, Benth.
bicornis, Lindl.
biflora, R. Br.
paradoxa, R. Br.
Threlkeldia diffusa, R. Br.
Anisacantha divaricata, R. Br.
bicuspis, F. Muell.
Salicornia tenuis, Benth.
australis, Soland.
Salsola Kali, Lin.

Intra-Tropical.

Rhagodia crassifolia, R. Br.
Chenopodium Nitrariacea, F. Muell.
auricomum, Lindl.
Dysphania littoralis, R. Br.
Atriplex humilis, F. Muell.
Anisacantha glabra, F. Muell.
Salicornia leiostachia, Benth.
Salsola Kali, Lin.

PARONYCHIACEÆ.

Indigenous in Australia, 3 Genera.
South Australia, 1 Genus.

Extra-Tropical.

Scleranthus pungens, R. Br.

AMARANTACEÆ.

Indigenous in Australia, 9 Genera.
South Australia, 7 Genera.

Extra-Tropical.

Hemichroa pentandra, R. Br.
diandra, R. Br.
Trichinium obovatum, Gaudich.
alopecuroideum, Lindl.
nobile, Lindl.
corymbosum, Gaudich.
exaltatum, Benth.
helipteroides, F. Muell.
Beckerianum, F. Muell.
gomphrenoides, Miq.
Trichinium erubescens, Miq.
spathulatum, R. Br.
leucocoma, Miq.
parvifolium, F. Muell.
Ptilotus Murrayi, F. Muell.
alopecuroideus, F. Muell.
latifolius, R. Br.
Alternanthera nodiflora, R. Br.
nana, R. Br.
Gomphrena brachystylis, F. Muell.

Intra-Tropical.

Amaranthus leptostachyus, Benth.
interruptus, R. Br.
Trichinium obovatum, Gaudich.
incanum, R. Br.
astrolasium, F. Muell.
dissitiflorum, F. Muell.
distans, R. Br.
alopecuroideum, Lindl.
exaltatum, Benth.
fusiforme, R. Br.
calostachyum, F. Muell.
Ptilotus conicus, R. Br.
corymbosus, R. Br.
spicatus, F. Muell.
Achyranthes aspera, Lin.
Alternanthera nodiflora, R. Br.
nana, R. Br.
Gomphrena canescens, R. Br.
flaccida, R. Br.
conica, Spreng.
diffusa, Spreng.
parviflora, Benth.

POLYGONACEÆ.

Indigenous in Australia, 4 Genera.
South Australia, 4 Genera.

Extra-Tropical.

Emex australis, Steinh.
Rumex crispus, Lin.
Brownii, Campd.
dumosus, A. Cunn.
bidens, R. Br.
Polygonum aviculare, Lin.
Polygonum plebeium, R. Br.
prostratum, R. Br.
minus, Huds.
attenuatum, R. Br.
Muhlenbeckia adpressa, Meissn.
Cunninghamii, F. Muell.

Intra-Tropical.

Rumex halophilus, F. Muell.
Polygonum minus, Huds.

NYCTAGINEÆ.

Indigenous in Australia, 2 Genera.
South Australia, 1 Genus.

Extra-Tropical.

Boerhaavia diffusa, Lin.

Intra-Tropical.

Boerhaavia diffusa, Lin.

MYRISTICEÆ.

Indigenous in Australia, 1 Genus.
South Australia, 1 Genus.

Intra-Tropical.

Myristica insipida, R. Br.

MONIMIACEÆ.

Indigenous in Australia, 8 Genera.
No representative in South Australia.

LAURINEÆ.

Indigenous in Australia, 8 Genera.
South Australia, 2 Genera.

Extra-Tropical.

Cassytha glabella, R. Br.
pubescens, R. Br.
Cassytha melantha, R. Br.

Intra-Tropical.

Tetranthera laurifolia, Jacq.
Cassytha glabella, R. Br.

PROTEACEÆ.

Indigenous in Australia, 29 Genera.
South Australia, 11 Genera.

Extra-Tropical.

Petrophila circinata, Kipp.
multisecta, F. Muell.
Isopogon ceratophyllus, R. Br.
Adenanthos sericea, Labill.
terminalis, R. Br.
Conospermum patens, Schlecht.
Persoonia juniperina, Labill.
Xylomelum pyriforme, Knight.
Grevillea Thelemanniana, Endl.
pterosperma, F. Muell.
ilicifolia, R. Br.
Youngii, F. Muell.
juncifolia, Hook.
Treuriana, F. Muell.
lavandulacea, Schlecht.
aspera, R. Br.
Grevillea Wickhami, Meissn.
pauciflora, R. Br.
Huegellii, Meissn.
stricta, R. Br.
parviflora, R. Br.
Hakea Pampliniana, Kipp.
vittata, R. Br.
rostrata, F. Muell.
rugosa, R. Br.
leucoptera, R. Br.
cycloptera, R. Br.
multilineata, Meissn.
ulicina, R. Br.
flexilis, F. Muell.
Banksia marginata, Cav.
ornata, F. Muell.

Intra-Tropical.

Persoonia falcata, R. Br.
Helicia australasica, F. Muell.
Grevillea agrifolia, A. Cunn.
Goodii, R. Br.
chrysodendron, R. Br.
Dryandri, R. Br.
heliosperma. R. Br.
Wickhami, Meissn.
Grevillea dimidiata, F. Muell.
pungens, R. Br.
leucadendron, A. Cunn.
Hakea chordophylla, F. Muell.
lorea, R. Br.
arborescens, R. Br.
Stenocarpus Cunninghamii, R. Br.

THYMELEÆ.

Indigenous in Australia, 4 Genera.
South Australia, 1 Genus.

Extra-Tropical.

Pimelea glauca, R. Br.
spathulata, Labill.
ligustrina, Labill.
humilis, R. Br.
simplex, F. Muell.
microcephala, R. Br.
serpyllifolia, R. Br.
Pimelea flava, R. Br.
petrophila, F. Muell.
curviflora, R. Br.
octophylla, R. Br.
petræa, Meissn.
phylicoides, Meissn.
stricta, Meissn.

Intra-Tropical.

Pimelea punicea, R. Br.
Pimelea concreta, F. Muell.

ELÆAGNACEÆ.

Indigenous in Australia, 1 Genus.
No representative in South Australia.

NEPENTHACEÆ.

Indigenous in Australia, 1 Genus.
No representative in South Australia.

EUPHORBIACEÆ.

Indigenous in Australia, 37 Genera.
South Australia, 18 Genera.

Extra-Tropical.

Euphorbia australis, Boiss.
Drummondii, Boiss.
Wheeleri, Baill.
eremophila, A. Cunn.
Poranthera ericoides, Klotzsch.
microphylla, Brongn.
Beyeria opaca, F. Muell.
uncinata, F. Muell.
Bertya rotundifolia, F. Muell.
Amperea spartioides, Brongn.
Phyllanthus calycinus, Labill.
Fuernrohrii, F. Muell.
thymoides, Sieb.
Gunnii, Hook.
Adriana Klotzschii, F. Muell.

Intra-Tropical.

Euphorbia atoto, Forst.
Schultzii, Benth.
Armstrongiana, Boiss.
Muelleri, Boiss.
Drummondii, Boiss.
micradenia, Boiss.
serrulata, Reinw.
eremophila, A. Cunn.
Poranthera microphylla, Brongn.
Antidesma Ghaesembilla, Gaertn.
Schultzii, Benth.
Dissiliaria baloghioides, F. Muell.
tricornis, Benth.
Petalostigma quadriloculare, F. Muell.
Phyllanthus ditassoides, F. Muell.
Adami, F. Muell.
ochrophyllus, Benth.
rigidulus, F. Muell.
baccatus, F. Muell.
Phyllanthus Urinaria, Lin.
trachygyne, Benth.
maderaspatanus, Lin.
Carpentariæ, F. Muell.
grandisepalus, F. Muell.
minutiflorus, F. Muell.
lacunarius, F. Muell.
Breynia stipitata, F. Muell.
Securinega obovata, F. Muell.
Hemicyclia sepiaria, W. & Arn.
lasiogyne, F. Muell.
Briedelia tomentosa, Blume.
Croton Schultzii, Benth.
Verreauxii, Baill.
arnhemicus, F. Muell.
Mallotus nesophilus, F. Muell.
Sebastiania chamelæa, F. Muell.
Excæcaria Agallocha, Lin.
parvifolia, F. Muell.

URTICEÆ.

Indigenous in Australia, 17 Genera.
South Australia, 7 Genera.

Extra-Tropical.

Parietaria debilis, Forst. | Urtica incisa, Poir.

Intra-Tropical.

Celtis philippinensis, Blanco.
paniculata, Planch.
Trema amboinensis, Blume.
aspera, Blume.
Ficus nesophila, Miq.
retusa, Lin.
leucotricha, Miq.
coronulata, F. Muell.

Ficus orbicularis, A. Cunn.
aculeata, A. Cunn.
scobina, Benth.
aspera, Forst.
Malaisia tortuosa, Blanco.
Fatoua pilosa, Gaudich.
Parietaria debilis, Forst.

CASUARINEÆ.

Indigenous in Australia, 1 Genus.
South Australia, 1 Genus.

Extra-Tropical.

Casuarina stricta, Ait.
glauca, Sieb.
distyla, Vent.

Casuarina torulosa, Ait.
bicuspidata, Benth.

Intra-Tropical.

Casuarina suberosa, Otto. | Casuarina equisetifolia, Forst.

PIPERACEÆ.

Indigenous in Australia, 2 Genera.
No representative in South Australia.

ARISTOLOCHIACEÆ.

Indigenous in Australia, 1 Genus.
South Australia, 1 Genus.

Intra-Tropical.

Aristolochia Thozetii, F. Muell.

CUPULIFERÆ.

Indigenous in Australia, 1 Genus.
No representative in South Australia.

SANTALACEÆ.

Indigenous in Australia, 8 Genera.
South Australia, 5 Genera.

Extra-Tropical.

Fusanus acuminatis, R. Br.
persicarius, F. Muell.
spicatus, R. Br.
crassifolius, R. Br.
Choretrum glomeratum, R. Br.
spicatum, F. Muell.

Leptomeria aphylla, R. Br.
Exocarpus cupressiformis, Labill.
spartea, R. Br.
aphylla, R. Br.
stricta, R. Br.

Intra-Tropical.

Santalum lanceolatum, R. Br.
ovatum, R. Br.

Exocarpus latifolia, R. Br.

BALANOPHOREÆ.

Indigenous in Australia, 1 Genus.
No representative in South Australia.

CONIFERÆ.

Indigenous in Australia, 11 Genera.
South Australia, 1 Genus.

Extra-Tropical.

Frenela robusta, A. Cunn. | Frenela rhomboidea, Endl.

Intra-Tropical.

Frenela robusta, A. Cunn.

CYCADEÆ.

Indigenous in Australia, 3 Genera.
South Australia, 1 Genus.

Intra-Tropical.

Cycas media, R. Br.

MONOCOTYLEDONS.

HYDROCHARIDEÆ.

Indigenous in Australia, 5 Genera.
South Australia, 3 Genera.

Intra-Tropical.

Ottelia alismoides, Pers.
Blyxa Roxburghii, Rich. | Vallisneria spiralis, Lin.

SCITAMINEÆ.

Indigenous in Australia, 7 Genera.
No representative in South Australia.

ORCHIDEÆ.

Indigenous in Australia, 48 Genera.
South Australia, 20 Genera.

Extra-Tropical.

Thelymitra ixioides, Sw.
aristata, Lindl.
longifolia, Forst.
fusco-lutea, R. Br.
carnea, R. Br.
antennifera, Hook.
Diuris palustris, Lindl.
maculata, Sm.
pedunculata, R. Br.
sulphurea, R. Br.
longifolia, R. Br.
Orthoceras strictum, R. Br.
Prasophyllum striatum, R. Br.
patens, B. Br.
Prasophyllum fuscum, R. Br.
nigricans, R. Br.
Microtis porrifolia, Spreng.
Corysanthes fimbriata, R. Br.
Lyperanthus nigricans, R. Br.
Pterostylis concinna, R. Br.
curta, R. Br.
nutans, R. Br.
cucullata, R. Br.
reflexa, R. Br.
barbata, Lindl.
mutica, R. Br.
rufa, R. Br.
longifolia, R. Br.

Pterostylis vittata, Lindl.
Acianthus exsertus, R. Br.
Eriochilus autumnalis, R. Br.
Cyrtostylis reniformis, R. Br.
Caladenia Menziesii, R. Br.
filamentosa, R. Br.
Caladenia Patersoni, R. Br.
latifolia, R. Br.
carnea, R. Br.
deformis, R. Br.
Glassodia major, R. Br.

Intra-Tropical.

Dendrobium dicuphum, F. Muell.
Vanda Hindsii, Lindl.
Geodorum pictum, Lindl.
Eulophia venosa, Reichb.
Dipodium punctatum, R. Br.
Habenaria trinervis, Wight.
elongata, R. Br.
graminea, Lindl.
Calanthe veratrifolia, R. Br.

BURMANNIACEÆ.

Indigenous in Australia, 1 Genus.
South Australia, 1 Genus.

Intra-Tropical.

Burmannia disticha, Lin.
Burmannia juncea, Soland.

IRIDEÆ.

Indigenous in Australia, 7 Genera.
South Australia, 2 Genera.

Extra-Tropical.

Patersonia longiscapa, Sweet.
Orthrosanthus multiflorus, Sweet.

AMARYLLIDEÆ.

Indigenous in Australia, 13 Genera.
South Australia, 8 Genera.

Extra-Tropical.

Crinum flaccidum, Herb.
pedunculatum, R. Br.
Calostemma purpureum, R. Br.
luteum, Sims.
Hypoxis glabella, R. Br.
pusilla, Hook.
hygrometrica, Labill.

Intra-Tropical.

Hæmodorum laxum, R. Br.
brevicaule, F. Muell.
coccineum, R. Br.
subvirens, F. Muell.
parviflorum, Benth.
Curculigo ensifolia, R. Br.
Hypoxis marginata, R. Br.
Crinum asiaticum, Lin.
venosum, R. Br.
Calostemma album, R. Br.

TACCACEÆ.

Indigenous in Australia, 1 Genus.
South Australia, 1 Genus.

Intra-Tropical.

Tacca pinnatifida, Forst.

DIOSCORIDEÆ.

Indigenous in Australia, 2 Genera.
South Australia, 1 Genus.

Intra-Tropical.

Dioscorea transversa, R. Br.
glabra, Roxb.
Dioscorea sativa, Lin.

ALISMACEÆ.

Indigenous in Australia, 3 Genera.
South Australia, 3 Genera.

Extra-Tropical.

Posidonia australis, Hook. | Cymodocea antartica, Endl.

Intra-Tropical.

Alisma oligococcum, F. Muell.

PALMÆ.

Indigenous in Australia, 6 Genera.
South Australia, 3 Genera.

Intra-Tropical.

Livistona inermis, R. Br. | Seaforthia elegans, R. Br.
humilis, R. Br. | Corypha australis, R. Br.

PANDANEÆ.

Indigenous in Australia, 1 Genus.
South Australia, 1 Genus.

Intra-Tropical.

Pandanus pedunculatus, R. Br. | Pandanus spiralis, R. Br.

TYPHACEÆ.

Indigenous in Australia, 2 Genera.
South Australia, 2 Genera.

Extra-Tropical.

Typha angustifolia, Lin. | Sparganium angustifolium, Mich.

AROIDEÆ.

Indigenous in Australia, 4 Genera.
South Australia, 3 Genera.

Extra-Tropical.

Arum orixense, Roxb. | Gymnostachys anceps, Benth.

Intra-Tropical.

Amorphophallus campanulatus, Dec.

LEMNACEÆ.

Indigenous in Australia, 1 Genus.
South Australia, 1 Genus.

Extra-Tropical.

Lemna minor, Lin. | Lemna trisulca, Lin.

LILIACEÆ.

Indigenous in Australia, 14 Genera.
South Australia, 6 Genera.

Extra-Tropical.

Thysanotus paniculatus. R. Br. | Arthropodium laxum, R. Br.
Patersoni, R. Br. | Bulbine bulbosa, Haw.
Stypandra cæspitosa, R. Br. | semibarbata, Spr.
Arthropodium paniculatum, R. Br. | Tricoryne scabra, R. Br.
fimbriatum, R. Br. | Cæsia parviflora, R. Br.
pendulum, Spr. | vittata, R. Br.
minus, R. Br.

Intra-Tropical.

Tricoryne elatior, R. Br. | Thysanotus chrysanthus, F. Muell.

MELANTHACEÆ.

Indigenous in Australia, 3 Genera.
South Australia, 3 Genera.

Extra-Tropical.

Anguillaria biglandulosa, R. Br.
dioica, R. Br.
uniflora. R. Br.
indica, R. Br.
Burchardia umbellata, R. Br.
Schelhammera undulata, R. Br.
multiflora, R. Br.

SMILACEÆ.

Indigenous in Australia, 3 Genera.
South Australia, 3 Genera.

Intra-Tropical.

Smilax latifolia, R. Br.
elliptica, R. Br.
Ripogonum album, R. Br.
Drymophila cyanocarpa, R. Br.

ASPARAGEÆ.

Indigenous in Australia, 6 Genera.
South Australia, 4 Genera.

Extra-Tropical.

Eustrephus latifolius, R. Br.
angustifolius, R. Br.
Dianella cærulea, Tims.
revoluta, R. Br.

Intra-Tropical.

Cordyline cannæfolia, R. Br.
Dracæna angustifolia, Roxb.
Asparagus fasciculatus, R. Br.

XEROTIDEÆ.

Indigenous in Australia, 6 Genera.
South Australia, 4 Genera.

Extra-Tropical.

Xerotes glauca, R. Br.
filiformis, R. Br.
leucocephala, R. Br.
rigida, R. Br.
longifolia, R. Br.
fluviatilis, R. Br.
Xerotes tenuifolia, R. Br.
æmula, R. Br.
Dasypogon bromeliæfolius, R. Br.
Xanthorrhœa semiplana, F. Muell.
quadrangulata, F. Muell.

JUNCEÆ.

Indigenous in Australia, 2 Genera.
South Australia, 2 Genera.

Extra-Tropical.

Juncus pallidus, R. Br.
prismatocarpos, R. Br.
maritimus, R. Br.
vaginatus, R. Br.
gracilis, R. Br.
revolutus, R. Br.
Holoschœnus, R. Br.
Juncus cæspitosa, E. Mey
planifolius, R. Br.
australis, Desf.
pallidus, R. Br.
communis, E. Mey.
pauciflorus, R. Br.
Luzula campestris, Des.

PHILYDREÆ.

Indigenous in Australia, 1 Genus.
South Australia, 1 Genus.

Intra-Tropical.

Philydrum lanuginosum, R. Br.

COMMELINACEÆ.

Indigenous in Australia, 3 Genera.
South Australia, 3 Genera.

Extra-Tropical.

Commelina ensifolia, R. Br.
lanceolata, R. Br.
Aneilema anthericoides, R. Br.
Aneilema acuminata, R. Br.
Cartonema spicatum, R. Br.

XYRIDEÆ.

Indigenous in Australia, 2 Genera.
South Australia, 1 Genus.

Extra-Tropical.

Xyris operculata, Labill.
gracilis, R. Br.
bracteata, R. Br.
Xyris paludosa, R. Br.
scabra, R. Br.
denticulata, R. Br.

FLAGELLARIEÆ.

Indigenous in Australia, 1 Genus.
South Australia, 1 Genus.

Intra-Tropical.

Flagellaria indica, Lin.

ERIOCAULONEÆ.

Indigenous in Australia, 1 Genus.
South Australia, 1 Genus.

Extra-Tropical.

Eriocaulon australe, R. Br.
pallidum, R. Br.
Eriocaulon nanum, R. Br.
cinereum, R. Br.

Intra-Tropical.

Eriocaulon scariosum, R. B.
stillulatum, Hook.
Eriocaulon nutans, F. Muell.

RESTIACEÆ.

Indigenous in Australia, 6 Genera.
South Australia, 6 Genera.

Extra-Tropical.

Restio australis, R. Br.
tetraphyllus, Labill.
complanatus, R. Br.
Leptocarpus tenax, R. Br.
Brownii, Hook.
Hypolæna fastigiata, R. Br.
Calorophus elongatus, Labill.
Centrolepis aristata, Roem. & Schult.
pulvinata, Roem. & Schult.
Alepyrum Muelleri, Hook.
polygonum, R. Br.

CYPERACEÆ.

Indigenous in Australia, 29 Genera.
South Australia, 15 Genera.

Extra-Tropical.

Cyperus Gunnii, Hook.
vaginatus, R. Br.
carinatus, R. Br.
lucidus, R. Br.
alopecuroides, Rottb.
Chætospora tenuissima, Hook.
nitens, R. Br.
imberbis, R. Br.
axillaris, R. Br.
Gymnoschœnus sphærocephalus, Hk.
Chorizandra enodis, Nees.
Eleocharis sphacelata, R. Br.
gracilis, R. Br.
palustris, R. Br.
Isolepis multicaulis, Schlecht.
fluitans, R. Br.
nodosa, R. Br.
Isolepis prolifera, R. Br.
setacea, R. Br.
cartilaginea, R. Br.
riparia, R. Br.
Scirpus maritimus, Lin.
triqueter, Lin.
Lepidosperma concavum, R. Br.
gladiatum, Labill.
longitudinale, Labill.
laterale, R. Br.
linearis, R. Br.
Cladium junceum, Hook.
tetraquetrum, Hook.
schœnoides, R. Br.
Gahnia trifida, Labill.
Psittacorum, Labill.

Intra-Tropical.

Cyperus Haspan, Lin.
Abildgardia monostachya, Vahl.
schœnoides, R. Br.
Carex inversa, R. Br.
appressa, R. Br.
littorea, Labill.
fascicularis, Soland.
longifolia, R. Br.
Fimbristylis dichotoma, Vahl.
Fimbristylis squarrulosa, F. Muell.
acuminata, Nees.
rythicarpa, F. Muell.
communis, R. Br.
Fuirena glomerata, Vahl.
Isolepis barbata, R. Br.
Diplacrum caricinum, R. Br.
Eleocharis acuta, R. Br.

GRAMINEÆ.

Indigenous in Australia, 64 Genera.
South Australia, 44 Genera.

Extra-Tropical.

Tetrarrhena tenacissima, Nees.
acuminata, R. Br.
lævis, R. Br.
Spinifex hirsutus, Labill.
fragilis, R. Br.
sericeus, R. Br.
Microlæna stipoides, R. Br.
Anthesteria australis, R. Br.
Hemarthria compressa, R. Br.
uncinata, R. Br.
Hierochloa rariflora, Nob.
antarctica, R. Br.
Alopecurus geniculatus, Lin.
Stipa semibarbata, R. Br.
pubescens, R. Br.
setacea, R. Br.
elegantissima, R. Br.
micrantha, R. Br.
mollis, R. Br.
ramosissima, Trin.
Dichelachne crinita, Nob.
Dichelachne stipoides, Nob.
Pentapogon Billardieri, R. Br.
Eragrostis lacunaria, F. Muell.
Agrostis quadriseta, R. Br.
stolonifera, Lin.
Billardieri, R. Br.
æmula, R. Br.
scabra, R. Br.
parviflora, R. Br.
Echinopogon ovatus, Pal.
Polypogon monspeliensis, Desf.
Phragmites communis, Trin.
Danthonia semi-annularis, R. Br.
nervosa, Hook.
pilosa, R. Br.
pauciflora, R. Br.
pallida, R. Br.
paradoxa, R. Br.
Glyceria fluitans, R. Br.
Poa australis, R. Br.
affinis, R. Br.

Poa parviflora, R. Br.
digitata, R. Br.
concinna, R. Br.
tenera, F. Muell.
Kœleria cristata, Pers.
Festuca bromoides, Lin.
distichophylla, Hook.
littoralis, Labill.
plebeia, R. Br.
Triticum scabrum, R. Br.
Andropogon tenuis, R. Br.
triticeus, R. Br.
sericeus, R. Br.
Lagurus ovatus, Lin.
stipoides, R. Br.
Aristida contorta, F. Muell.
vagans, Cav.
Arundo Phragmites, Lin.
Cynodon Dactylon, Pers.
tenellus, R. Br.
Chloris truncata, R. Br.
Chloris latevalvis, F. Muell.
meccana, Hochst.
Hordeum pratense, Huds.
Microlæna stipoides, R. Br.
Panicum Crus-galli, Lin.
decompositum, R. Br.
Triraphis mollis, R. Br.
Cinna ovata, Kunth.
Cenchrus australis, R. Br.
Brownii, R. S.
Sporobolus elongatus, R. Br.
actinoclados, F. Muell.
Erianthus fulvus, Benth.
Pappophorum commune, F. Muell.
Setaria glauca, Beauv.
Lappago racemosa, Willd.
Deyeuxia Forsteri, Kunth.
Dactyloctenium ægyptiacum, Willd.
Monachather paradoxa, Steud.
Cymbopogon cygnorum, Minor.

Intra-Tropical.

Sporobolus pulchellus, R. Br.
Anthesteria ciliata, Lin.
frondosa, R. Br.
Eragrostis polymorpha, R. Br.
Eriachne avenacea, R. Br.
Ischæmum triticum, R. Br.
Setaria glauca, Beauv.
Spinifex fragilis, R. Br.
Cymbopogon procerus, R. Br.
Panicum angustum, Trin.
polyphyllum, R. Br.
effusum, R. Br.
ovalifolium, Beauv.
Petiverii, Trin.
decompositum, R. Br.
Ectrosia leporina, R. Br.
Aristida stipoides, R. Br.

ACOTYLEDONS.

FILICES.

Indigenous in Australia, 35 Genera.
South Australia, 23 Genera.

Botrychium Lunaria, Siv.
ternatum, Siv.
Ophioglossum vulgatum, Lin.
Schizæa dichotoma, Sw.
Todea africana, Willd.
Gleichenia circinata, R. Br.
Lindsæa linearis, Sw.
Adiantum æthiopicum, Lin.
Lomaria capensis, Willd.
discolor, Willd.
procera, Sw.
lanceolata, Spreng.
Patersoni, Spreng.
fluviatilis, Spreng.
Cheilanthes tenuifolius, Sw.
distans, A. Br.
Sieberii, Kunz.
vellea, F. Muell.
Pteris falcata, R. Br.
incisa, Thunb.
umbrosa, R. Br.
esculenta, Forst.
Asplenium flabelliformis, Cav.
obtusatum, Forst.
bulbiferum, Forst.
Aspidium molle, Sw.
decompositum, Spreng.
Grammitis leptophylla, Sw.
rutifolia, R. Br.
australis, R. Br.
Gymnogramma Pozoi, Kunz.
Notochlæna Reynoldii, F. Muell.
fragilis, Hook.
Polystichium vestitum, Presl.
Nephrodium decompositum, R. Br.

Intra-Tropical.

Schizæa dichotoma, Sw.
Acrostichum aureum, Lin.
pteroides, Hook.
Adiantum lunulatum, Beauv.
Lindsaya ensifolia, Sw.
tenera, Dryand.
flabellulata, Dryand.
Lygodium scandens, Sw.
semibipinnatum, R. Br.
microphyllum, R. Br.
Gleichenia dichotoma, Willd.
Polypodium quercifolium, Lin.
Polypodium Linnæi, Borg.
Aspidium unitum, Sw.
Blechnum orientale, Lin.
serrulatum, Rich.
striatum, R. Br.
Ceratopteris thalictroides, Brongn.
Cheilanthes fragillina, F. Muell.
tenuifolia, Sw.
Pteris aquilina, F. Muell.
Ophioglossum vulgatum, Lin.
Botrychium virginianum, Sw.
Notochlæna fragilis, Humb. & Bonpl.

LYCOPODIACEÆ.

Indigenous in Australia, 2 Genera.
South Australia, 2 Genera.

Extra-Tropical.

Lycopodium densum, Labill.
varium, R. Br.
Lycopodium volubile. Forst.
Selaginella Belangeri, Sw.

MARSILEACEÆ.

Indigenous in Australia, 1 Genus.
South Australia, 1 Genus.

Extra-Tropical.

Marsilea macropus, Hook.
Marsilea quadrifolia, Lin.

SALVINIEÆ.

Indigenous in Australia, 1 Genus.
South Australia, 1 Genus.

Extra-Tropical.

Azolla rubra, R. Br.
Azolla pinnata, R. Br.

THE FAUNA OF SOUTH AUSTRALIA.

By F. G. Waterhouse, Esq., C.M.Z.S., H.M.R.S. and F.L.S.
New South Wales, &c. &c.

In order to make this work as complete as possible, it was arranged to give a classified list of fauna indigenous to the Colony. Mr. F. G. Waterhouse, the able Curator of the Museum, whose fitness for the work will be admitted by all who know him, undertook to present a classified catalogue of the animals and birds which are met with in South Australia. For a series of years Mr. Waterhouse has been collecting materials, the results of which are embodied in the following pages. With other forms of animal life he has not dealt. Reptiles, insects, and fishes, to have been exhaustively catalogued and classified, would have taken more time than Mr. Waterhouse has at his disposal, and would have required a lifetime to prepare carefully. It would have exceeded, too, the limits of this volume. The mammals and birds are of greatest interest. It will be borne in mind that Mr. Waterhouse confines his attention to the indigenous fauna of the Colony. All the domestic animals, and most of the birds known in Europe, have been acclimatized here, and without a single exception they seem to do well.

The third chapter in this division of the book is on mines and minerals, in the preparation of which Mr. Waterhouse has been assisted by Mr. J. B. Austin—a gentleman who has paid a great deal attention of to the subject. In the former part of the work, I have glanced generally at the mining interest; but this chapter goes more into details than I could do, and it is the result of personal and practical knowledge on the part of the writer.

With these few prefatory remarks, I now allow Mr. Waterhouse to speak for himself.

"AUSTRALIAN VERTEBRATA: MAMMALS.

"According to Mr. Gerard Krefft, the able Curator of the Australian Museum, Sydney, the fauna of Australia is distinguished by a large number of marsupial animals, which are now extinct in almost every other part of the world, and considered to be the oldest mammals known. A few living species allied to our Dasyures still exist in America, and fossil remains were found in France and England, which indicate the presence of marsupials at a very early period, when mammalian life was at its infancy; in fact the general belief is, that the first mammals belonged to the marsupial or pouched tribe. The isolated position of Australia may have caused these animals to retain their stronghold here much longer than in other countries; and it is almost certain that many of their predecessors were also marsupials, equal in size to the rhinoceros and the hippopotamus.

"The living species are of moderate growth, and the largest do not exceed two hundred pounds in weight; they are divided into carnivorous or flesh-eating and herbivorous or grass-eating sections, with a few genera of mixed feeders.

"At a rough estimate, we know 110 marsupials in Australia, to which must be added—twenty-four bats, one dog, thirty rats and mice; and a number of seals and whales, which, inhabiting the ocean, are not restricted in their habitat. The most peculiar Australian animals are the duck-billed platypus, and the spiny ant-eater; both of which are peculiar to this country.

"Of the placental series—the curious water-rats or beaver-rats must be mentioned as being purely Australian. The dog was, no doubt, a very early introduction, because fossil remains were discovered contemporaneous with the great extinct marsupials of post-pleiocene times. Of man we have but scanty evidence regarding the length of his existence here; in not one instance were weapons or implements obtained with the remains of fossil animals. Stone weapons are still used by many tribes, and the primitive art of splitting, grinding, and shaping various rocks into hatchets and spear heads is not yet lost.

"The subjoined is a list of the mammals found in the Province of South Australia; those marked with an asterisk came from the Northern tropical portion of this Colony :—

MAMMALIA.

CHEIROPTERA.

a. Frugivorous ..... Bats.

PTEROPUS.

* P. poliocephalus ..... Grey-headed vampire | * P. funereus ..... Funeral vampire.

b. Insectivorous ..... Bats.

MOLOSSUS.

M. australis ..... Australian molossus.

TAPHOZOUS.

* T. flaviventris ..... Yellow-bellied taphozous.

RHINOLOPHUS.

* R. aurantius ..... Orange horse-shoe bat.

SCOTOPHILUS.

S. Gouldi ..... Gould's bat
morio ..... Chocolate bat | S. picatus ..... Pied bat.

VESPERTILIO.

V. macropus ..... Great-footed bat.

CANIDÆ.—DOG TRIBE.

CANIS.

C. Dingo ..... The dingo.

PHOCIDÆ.—SEAL TRIBE.

STENORHYNCHUS.

S. leptonyx ..... Sea leopard.

ARCTOCEPHALUS.

A. lobatus ..... Cowled seal.

RODENTIA.—RAT TRIBE.

a. Long-eared Rats.

HAPALOTIS.

H. allipes ..... White-footed hapalotis
conditor ... Building hapalotis | H. Mitchellii ... Mitchell's hapalotis
cervina ..... Fawn-coloured hapalotis.

b. Short-eared Rats.

MUS.

M. fuscipes..... Dusky-footed rat
vellerosus ... Tawny „
assimilis ... Allied „
M. Gouldi ..... White-footed rat
nanus ..... Little „

c. Water Rats.

HYDROMYS.

H. chrysogaster Golden-bellied beaver rat
fulvolavatus Fulvous beaver rat
H. leucogaster White-bellied beaver rat
lutrilla ..... Small beaver rat.

CETACEA.—WHALE TRIBE.

BALÆNA.

B. Australis.

MARSUPIALIA.

RHIZOPHAGA.—WOMBAT TRIBE.

PHASCOLOMYS.

P. latifrons ... Broad-fronted wombat
P. platyrhinus Hairy-nosed wombat
niger ..... Black „

CARPOPHAGA.—PHALANGER TRIBE.

PHASCOLARCTOS.

P. cinereus ..... Koala or native bear.

PHALANGISTA.

P. vulpina ..... Vulpine phalanger | P. viverrina ... Viverrine phalanger.

DROMICIA.

D. gliriformis ..... Thick-tailed dromicia.

CUSCUS.

* C. brevicaudatus ..... Short-tailed cuscus.

PETAURISTA.

P. taguanoides ..... Great flying phalanger.

BELIDEUS.

B. flaviventer Long-tailed belideus
sciureus ... Squirrel-like „
breviceps ... Short-headed „
B. notatus ..... Striped-tailed belideus
* ariel ..... Ariel.

ACROBATA.

A. pygmæa ..... Pigmy acrobates.

POEPHAGA.—KANGAROO TRIBE.

MACROPUS.

M. major..... Great grey kangaroo | M. fuliginosus Sooty kangaroo.

OSPHRANTA.

O. rufus ..... Great red kangaroo | O. crebescens... Uroo kangaroo.

HALMATURUS.—WALLABY.

H. Greyi..... Grey's wallaby | H. Derbianus... Derby's wallaby.

PETROGALE.—ROCK WALLABY.

P. xanthopus ..... Yellow-footed rock wallaby.

ONYCHOGOLEA.—NAIL-TAILED KANGAROO.

O. lunata.

LAGORCHESTER.—HARE KANGAROO.

L. leporoides ..... Hare kangaroo.

BETTONGIA.—BETTONGS, OR JERBOA KANGAROOS.

B. Graii ..... Gray's jerboa kangaroo
campestris Plain „ „ | B. Ogilbyi ... Ogilby's jerboa kangaroo.

HYPSIPRYMORUS.—RAT KANGAROO.

H. Gilberti... Gilbert's rat kangaroo | H. platyops Broad-faced kangaroo.

ENTOMOPHAGA.—BANDICOOT TRIBE.

PERAMELES.

P. fasciata ... Banded bandicoot | P. obesula ... Short-nosed bandicoot.

PERAGALIA.

P. lagotis ..... Long-eared peragalia.

CHŒROPUS.

C. castanotis ..... Chestnut-eared chœropus.

SARCOPHAGA.—NATIVE CAT TRIBE.

DASYURUS.—NATIVE CAT.

D. maculatus Spotted-tailed dasyurus. | D. viverrinus Variable dasyurus
Geoffroyi Geoffroy's „

PHASCOGALE.—BRUSH-TAILS.

P. penicillata Brush-tailed phascogale | P. calura ... Handsome-tailed phascogale.

ANTECHINUS.—BROAD-FOOTED "POUCHED MICE."

A. Swainsoni Swainson's antechinus
flavipes... Rusty-footed antechinus | A. leucopus White-footed antechinus.

PODABRUS—SLENDER-FOOTED "POUCHED MICE."

P. crassicaudatus Thick-tailed podabrus | P. allipes ... White-footed podabrus.

MYRMECOBIUS.—BRUSH-TAILED ANT-EATER.

M. fasciatus ..... Branded myrmecobius.

c. Monotremata.

ECHIDNA.—SPINY ANT-EATER.

E. hystrix ..... Spiny ant-eater.

ORNITHORHYNCHUS.

O. anatinus ..... Duck-bill platypus.

"BIRDS.

"The Avi Fauna of Australia is considerable, though perhaps not so rich as that of other countries under the same latitude. Australia is famous for the beauty of her many parrots, over sixty species of which are found here; the honey-eaters are also numerous and varied in plumage, while bower-building birds, mound-raising megapodes, and stately emus, are peculiar to this favoured region. Game species abound; there are many pigeons, ducks, geese, plovers, and quail, and every bay or island along the coast-line is swarming with noisy sea-birds. Some large groups are however absent; we have no woodpeckers, no humming-birds, no trogons, and but a few good songsters. Other handsome forms compensate in some measure for this loss. Numerous game and singing birds have been imported from other parts, and all thrive well.

"The total number of species is nearly 700.

"The following is a list of the species found in the Province of South Australia; those marked with an asterisk are from the northern tropical portion of the Colony:—

AVES.

ORDER RAPTORES.

FAM. FALCONIDÆ.

Aquila audax	Wedge-tailed eagle
morphnoides	Little eagle
Polioaëtus leucogaster	White-bellied sea-eagle
Haliastur leucosternus	White-breasted eagle
sphenurus	Whistling eagle
Pandion leucocephalus	White-headed osprey
Falco hypoleucus	Grey falcon
melanogenys	Black-checked falcon
subniger	Black falcon
lunulatus	White-fronted falcon
Hierocidea berigora	Brown hawk
occidentalis	Western brown hawk
Tinnunculus cenchroides	Nankeen kestrel
Leucospiza raii	New Holland goshawk
Novæ-Hollandiæ	Albino goshawk
Astur approximans	Australian goshawk
cruentus	West Australian goshawk
Accipiter torquatus	Collared sparrow-hawk.
Gypoctinia melanosternon	Black-breasted buzzard
Milvus affinis	Allied kite
isurus	Square-tailed kite

Elanus axillaris	Black-shouldered kite
scriptus	Letter-winged kite
*Baza subcristata	Crested hawk
Circus assimilis	Allied harrier
Jardinii	Jardine's harrier.

FAM. STRIGIDÆ.

Strix Novæ-Hollandiæ	Masked owl
delicatula	Delicate owl
*Hieracoglaux rufus	Rufous owl
connivens	Winking owl
Spiloglaux marmoratus	Marbled owl
boobook	Boobook owl
maculatus	Spotted owl.

ORDER INSESSORES.

FAM. CAPRIMULGIDÆ.

Ægotheles Novæ-Hollandiæ	Owlet nightjar
Podargus Cuvieri	Cuvier's podargus
* phalænoides	Moth-plumed podargus
Eurostopodus guttatus	Spotted nightjar.

FAM. CYPSELIDÆ.

Chætura caudacuta	Spine-tailed swift
*Cypselis australis	Swift.

FAM. HIRUNDINIDÆ.

Hirundo neoxena	Welcome swallow
fretensis	Torres Straits swallow
Hylochelidon nigricans	Tree swallow
Lagenoplastes ariel	Fairy martin
Cheramœca leucosterna	White-breasted swallow.

FAM. MEROPIDÆ.

Merops ornatus	Australian bee-eater.

FAM. CORACIDIÆ.

*Eurystomus pacificus	Australian roller.

FAM. ALCEDINIDÆ.

Dacelo gigas	Great brown kingfisher
* cervina	Fawn-breasted kingfisher
Toderamphus sanctus	Sacred kingfisher
pyrrhopygius	Redbacked kingfisher
* sordidus	Sordid kingfisher
*Cyanalcyon Macleayi	MacLeay's kingfisher
Alcyon azurea	Azure kingfisher
pulchra	Beautiful kingfisher
* pusilla	Little kingfisher.

FAM. ARTAMIDÆ.

Artamus sordidus	Wood swallow
minor	Little wood swallow
cinereus	Grey-breasted wood swallow
melanops	Black-faced wood swallow
personatus	Marked wood swallow
superciliosus	White-eyebrowed wood swallow
leucopygialis	White-rumped wood swallow.

FAM. AMPELIDÆ.

Pardalotus punctatus	Spotted diamond bird
rubricatus	Red-lored diamond bird
striatus	Striated diamond bird
affinis	Allied diamond bird
uropygialis	Yellow-rumped diamond bird
xanthopygialis	Yellow-rumped diamond bird.

FAM. LANIADÆ.

Strepera fuliginosa	Sooty crow shrike
arguta	Hill crow shrike
anaphonensis	Grey crow shrike
Gymnorhina tibicen	Piping crow shrike
leuconota	White-backed crow shrike
Cracticus nigrogularis	Black-throated crow shrike
* picatus	Pied crow shrike
* argenteus	Silvery-backed crow shrike
* quoqui	Quoy's crow shrike
torquatus	Collared crow shrike
Grallina picata	Pied grallina.

FAM. CAMPEPAGINÆ.

Grancalus melanops	Black-faced grancalus
* hypoleucus	White-bellied grancalus
Pteropodocys phasianella	Ground grancalus
*Campephaga karu	Northern campephaga
humeralis	White-shouldered campephaga
Pachycephala gutteralis	White-shouldered thickhead
* melanura	Black-tailed thickhead
rufiventris	Rufous-breasted thickhead
rufogularis	Red-throated thickhead
Gilberti	Gilbert's thickhead
* simplex	Plain-coloured thickhead
Colluricincla harmonica	Harmonious shrike thrush
rufiventris	Buff-bellied shrike thrush
* brunea	Brown shrike thrush
* parvula	Little shrike thrush
* rufogaster	Rosy-breasted shrike thrush
Falcunculus frontatus	Frontal shrike thrush
Oreoica cristata	Crested oreoica.

FAM. DICRURIDÆ.

*Dicrurus bracteatus	Spangled drongo shrike.

FAM. MUSCICAPIDÆ.

Rhipidura albiscapa	White-shafted fantail
* dryas	Wood fantail
* isura	Northern fantail
motacilloides	Black fantail
* pictata	Pied fantail
Seizura inquieta	Restless flycatcher
*Piezorhynchus nitidus	Shining flycatcher
*Myiagra concinna	Pretty flycatcher
Micræca facinans	Brown flycatcher
Gerygone fusca	Brown gerygone
culicivora	Western gerygone
* magnirostris	Great-billed gerygone
* chloronota	Green-backed gerygone
Smicrornis brevirostris	Short-billed smicrornis
* flavescens	Yellow-tinted smicrornis.

FAM. SAXICOLIDÆ.

Erythrodryas rhodinogaster	Pink-breasted wood robin
Petrœca multicolor	Scarlet-breasted robin
Goodenovii	Red-capped robin
phœnicea	Flame-breasted robin
Melanodryas cucullata	Hooded robin
* picata	Pied robin
Drymodes brunneopygia.....	Buff-sided robin
Eopsaltria griseogularis	Grey-breasted robin.

FAM. MENURIDÆ.

Sphenostoma cristatum	Crested wedge-tail.

FAM. ——— ?

Malurus cyaneus	Superb warbler
Lamberti	Lambert's warbler
leucopterus	White-winged warbler
leuconotus	White-backed warbler
* cruentatus	Brown's warbler
Amytis texilis	Texile wren
striatus.....	Striated wren
n. sp.....	Goyderi
Stipiturus malachurus.....	Emu wren
Sphenura brachyptera.....	Bristle bird
Hylacola pyrrhopygia	Red-rumped hylacola
cauta	Cautious hylacola
Cisticola exilis	Exile grass warbler
lineocapilla	Lineated grass warbler
Sericornis osculans	Allied tericornis
* lævigaster	Buff-breasted tericornis
Acanthiza pyrrhopygia	Red-rumped acanthiza
inornata	Plain-coloured acanthiza
nana	Little acanthiza
Geobasileus chrysorrhous	Yellow-rumped acanthiza
reguloides.....	Buff-rumped acanthiza
Ephthianura albifrons	White-fronted ephthianura
aurifrons	Orange-fronted ephthianura
tricolor	Tricoloured ephthianura
Xerophilla leucopsis	White-faced xerophila
pectoralis	Gibson's xerophila
Pyrrholemus brunneus	Red throat
Calamanthus fuliginosus	Striated calamanthus
campestris	Field calamanthus
Chthonicola sagittata	Little chthonicola.

FAM. MOTACILLIDÆ.

Anthus australis	Australian pipit
Cincloramphus cruralis	Brown cincloramphus
cantilans	Black-breasted cincloramphus
Ptenoedus rufescens.....	Rufous-tinted cincloramphus
Sphencœacus galactotes	Tawny grass bird
gramineus	Little grass bird.

FAM. SYLVIADÆ.

Calamoherpe australis	Reed warbler
Mirafra Horsfieldii	Horsfield's brush lark.

FAM. FRINGILLIDÆ.

Ægintha temporalis	Red-eyebrowed finch
Neochmia phaeton	Crimson finch
Stagonopleura guttata	Spotted-sided finch
Tæniopygia castenotis	Chestnut-eared finch
*Poephila Gouldiæ	Gouldian grass finch
* mirabilis	Beautiful grass finch
* acuticauda	Long-tailed grass finch
* personata	Masked grass finch
Emblama picta	Painted finch.

FAM. MELURIDÆ.

Pitta iris	Rainbow pitta
Cinclosoma punctatum	Spotted ground thrush
castanotum	Chestnut-backed ground thrush
cinnamoemum	Cinnamon ground thrush
Oreocincla lunulata	Mountain thrush.

FAM. PARADISEIDÆ.

*Chlamydera nuchalis	Great bower bird
maculata	Spotted bower bird
Mimeta viridis	New South Wales oriole
* affinis	Allied oriole
* flavocincta	Chestnut-marked oriole
*Specotheres flaviventris	Northern sphecotheros
Corcorax melanoramphus	White-winged corcorax
Struthidea cinerea	Grey struthidea.

FAM. CORVIDÆ.

Corvus australis	White-eyed crow.

FAM. CRATEROPODIDÆ.

Pomatostomus temporalis	Temporal pomatostomus
rubeculus	Red-breasted pomatostomus
superciliosus	White-eyebrowed pomatostomus
ruficeps	Chestnut-crowned pomatostomus.

FAM. MELIPHAGIDÆ.

Meliornis Novæ-Hollandiæ	New Holland honey-eater
Lichmera australasiana	Tasmanian honey-eater
Glycyphila fulvifrons	Fulvous honey-eater
albifrons	White-fronted honey-eater
* fasciata	Fasciated honey-eater
Stigmatops ocularis	Brown honey-eater
* subocularis	Least honey-eater
Ptilotis sonora	Singing honey-eater
flavigula	Yellow-throated honey-eater
leucotis	White-eared honey-eater
cratitia	Wattle-cheeked honey-eater
ornata	Graceful honey-eater
plumula	Plumed honey-eater
* flava	Yellow honey-eater
penicillata	White-plumed honey-eater
chrysops	Yellow-faced honey-eater
*Stomiopera unicolor	Uniform honey-eater
Plectorhyncha lanceolata	Lanceolate honey-eater
Meliphaga phrygia	Warty-faced honey-eater
Lichnotentha picata	Pied honey-eater
Conophophila albigularis	White-throated honey-eater

Conophophila rufigularis	Red-throated honey-eater
Acanthogenys rufigularis	Spring-cheeked honey-eater
Anthochæra carunculata	Wattled honey-eater
Anellobia mellivora.....	Brush wattle bird
Tropidorhynchus corniculatus	Friar bird
* buceroides.....	Helmeted friar bird
* argenticeps	Silvery-crowned friar bird
* sordidus.....	Sordid friar bird
Acanthorhynchus tenuirostris	Spine-bill
*Myzomela sanguinolenta.....	Sanguineous honey-eater
* erythrocephala	Red-headed honey-eater
* pectoralis	Banded honey-eater
* nigra	Black honey-eater
* obscura	Obscure honey-eater
*Entomyza albipennis	White-quilled honey-eater
Melithreptus gularis	Black-throated honey-eater
lunulatus	Lunated honey-eater
* albogularis.....	White-throated honey-eater
Myzantha garrula	Garrulous honey-eater
obscura	Sombre honey-eater
* lutea	Luteous honey-eater
Dicæum hirundinaceum.....	Swallow dicæum
Zosterops cærulescens.....	Grey-backed zosterops
* luteus	Yellow zosterops.

FAM. CERTHIADÆ.

Climacteris scandens	Brown tree-creeper
rufa	Rufous tree-creeper
* melanura.....	Black-tailed tree-creeper
leucophea	White-throated tree-creeper
*Sittella leucoptera	White-winged sittella
pileata	Black-capped sittella.

FAM. CUCULIDÆ.

Cacomantis pallidus	Pallid cuckoo
* flabelliformis	Fan-tailed cuckoo
insperatus.....	Brush cuckoo
* dumatorum	Square-tailed cuckoo
Mesocalius osculans.....	Black-eared cuckoo
Lamprococcyx plagosus	Bronze cuckoo
* minutillus	Little bronze cuckoo
basalis.....	Narrow-billed cuckoo
Scythrops Novæ-Hollandiæ	Channel-bill
*Eudynamis Flindersi	Australian koel
*Centropus macrourus	Great-tailed coucal.

FAM. PSITTACIDÆ.

Cacatua galerita	Sulphur-crested cockatoo
Leadbeateri	Leadbeater's cockatoo
sanguinea	Blood-stained cockatoo
roseicapilla	Rose-breasted cockatoo
Licmetis tenuirostris	Long-billed cockatoo
*Calyptorhynchus macrorhynchus	Great-billed black cockatoo
Leachii	Leach's black cockatoo
xanthonotus	Yellow-eared black cockatoo
Callocephalon galeatum	Gan-gan cockatoo
*Polytelis Alexandræ	The Princess of Wales's parrakeet

Polytelis melanura	Black-tailed parrakeet
*Ptistes coccineopterus	Crimson-winged lory
Platycercus Barnardi	Barnard's parrakeet
zonarius	Banded parrakeet
Pennantii	Pennant's parrakeet
adelaidensis	Adelaide parrakeet
venustus	Beautiful parrakeet
eximius	Rose-bill parrakeet
Psephotus hæmatorrhous	Red-vented parrakeet
xanthorrhous	Yellow-vented parrakeet
multicolor	Varied parrakeet
hæmatonotus	Red-rumped parrakeet
Euphema elegans	Elegant grass parrakeet
aurantia	Orange-bellied grass parrakeet
petrophila	Rock grass parrakeet
splendida	Splendid grass parrakeet
Bourkii	Bourk's grass parrakeet
Melopsittacus undulatus	Warbling grass parrakeet
Calopsitta Novæ-Hollandiæ	Cockatoo parrakeet
Pezoporus formosus	Ground parrakeet
Geopsittacus occidentalis	Western ground parrakeet
Lathamus discolor	Swift lorikeet
Trichoglossus multicolor	Blue-bellied lorikeet
* rubritorquis	Red-collared lorikeet
*Ptilochera versicolor	Varied lorikeet
Glossopsitta australis	Musk lorikeet
porphyrocephalus	Porphyro-crowned lorikeet
pulsilla	Little lorikeet.

ORDER RASORES.

FAM. COLUMBIDÆ.

*Myristictivora spilorrhoa	White nutmeg pigeon
*Ptlinopus Ewingii	Ewing's fruit pigeon
*Chalcophaps chrysochlora	Little green pigeon
Phaps chalcoptera	Common bronzewing
elegans	Brush bronzewing
histrionica	Harlequin bronzewing
*Geophaps Smithii	Smith's bronzewing
Lophophaps plumifera	Plumed bronzewing
ferruginea	Rust-coloured bronzewing
Ocyphaps lophotes	Crested bronzewing
Erythrauchæna humeralis	Barred-shouldered dove
Geopelia tranquilla	Peaceful dove
* placida	Placid dove
Stictopelia cuneata	Little turtle-dove

FAM. MEGAPODIDÆ.

Leipoa ocellata	Ocellated leipoa
*Megapodius tumulus	Australian megapode.

FAM. TURNICIDÆ.

Turnix varius	Varied turnix
* castanotus	Chestnut-backed turnix
velox	Swift-flying turnix
pyrrhothorax	Red-crested turnix
Pedionomus torquatus	Collared plain wanderer.

FAM. PERDICIDÆ.

Coturnix pectoralis	Pectoral quail
Synoicus australis	Swamp quail
sordidus	Sombre quail
* cervinus	Northern quail
Excalfatoria australis	Least swamp quail.

ORDER GRALLATORES.

FAM. STRUTHIDIONIDÆ.

Dromanius Novæ-Hollandiæ	Emu
inornatus	Spotted emu.

FAM. OTIDIDÆ.

Choriotis australis	Australian bustard.

FAM. CHARADRIDÆ.

Œdicnemus grallarius.....	Southern stone plover
*Esacus magnirostris	Large-billed shore plover
Hæmatopus longirostris.....	White-breasted oyster-catcher
fuliginosus	Sooty oyster-catcher
Lobivanellus lobatus	Wattled plover
* personatus..... ..	Masked plover
Sarciophorus pectoralis	Black-breasted plover
Squatarola helvetica	Grey plover
Charadrius orientalis	Australian plover
Eudromius australis	Australian dottrell
Cirrepidesmus asiaticus	Asiatic dottrell
* Geoffroyi.....	Geoffroy's dottrell
Ægialites monacha	Hooded dottrell
nigrifrons	Black-fronted dottrell
Ægialophilus ruficapillus	Red-capped dottrell
Ochthodromus inornatus	Allied dottrell
bicinctus.....	Double-banded dottrell
Erythrogonyx cinctus	Red-kneed dottrell.

FAM. GLAREOLIDÆ.

*Glareola grallaria.....	Practincole Australian.

FAM. HIMANTOPODIDÆ.

Himantopus leucocephalus.....	White-headed stilt
Cladorhynchus pectoralis	Banded stilt.

FAM. RECURVIROSTRIDÆ.

Recurvirostris rubicollis.....	Red-necked vaocet.

FAM. LIMOSIDÆ.

*Limosa uropygialis	Barred-rumped godwit.

FAM. TRINGIDÆ.

Limnocinclus acuminatus	Marsh tringa
Ancylochilus subarquatus	Curlew sandpiper
Actodromas australis	Little sandpiper
Actitis hypoleucos	Common sandpiper
Glottis glottoides.....	Greenshank
Strepsilas interpres	Turnstone

FAM. SCOLOPACIDÆ.

Gallinago australis	New Holland snipe
Rhynchæa australis.....	Australian rhynchæa.

FAM. ——— ?

Numenius cyanopus	Australian curlew
uropygialis.....	Australian wimbrel
minor	Little wimbrel.

FAM. TANTALIDÆ.

Carphibis spinicollis	Straw-necked ibis
Threskiornis strictipennis	White ibis
Falcinellus igneus	Glossy ibis
Platalea regia	Royal spoonbill
Platibis flavipes	Yellow-legged spoonbill.

FAM. GRUIDÆ.

Grus australasianus	Australian crane.

FAM. CICONIDÆ.

*Xenorhynchus australis	Australian jabiru.

FAM. ARDEIDÆ.

Ardea cinerea	Common heron
pacifica	Pacific heron
Novæ-Hollandiæ	White-fronted heron
Herodias alba	Australian egret
egrettoides	Plumed egret
melanopus	Spotless egret
asha	Sombre egret
* picata	Pied egret
Demiegretta jugularis.....	Black-reef heron
* Greyi	White-reef heron
Nycticorax caladonicus	Nankeen night heron
Botaurus poiciloptilus.....	Australian bittern
Butoroides flavicollis	Yellow-necked mangrove bittern
Ardetta pusilla.....	Minute bittern
Porphyrio melanotus	Black-backed porphyrio
Tribonyx ventralis	Black-tailed tribonyx
Gallinula tenebrosa	Sombre gallinule
Fulica australis	Australian coot
Hypotænidia philippensis	Pectoral rail
Rallus brachypus.....	Lewin's water rail
*Eulabeornis castaneiventris	Chestnut-bellied rail
Porzana fluminea.....	Spotted water crake
palustris	Little water crake
tabuensis	Tabuan water crake.

ORDER NATATORES.

FAM. ANATIDÆ.

Chenopis atrata	Black swan
Cereopsis Novæ-Hollandiæ	Cereopsis goose
Anseranas melanoleuca	Semipalmated goose
Chlamydochen jubata.....	Maned goose
*Nettapus pulchellus	Green pigmy goose
Tadorna radjah	Rajah sheldrake

Casarca tadornoides	Chestnut-coloured sheldrake
Anas superbosa	Australian wild duck
punctata	Australian teal
Stictonetta nævosa	Freckled duck
Spatula rhynchotis	Australian shoveller duck
Malacorhynchus membranaceus	Pink-eyed duck
Dendrocygna Gouldi	Gould's whistling tree duck
Eytoni	Eyton's tree duck
Nyroca australis	White-eyed duck
Biziura lobata	Musk duck.

FAM. LARIDÆ.

Larus pacificus	Pacific gull
Bruchigavia Jamesonii	Silver gill
Stercorarius catarrhactes	Great skua.

FAM. STERNIDÆ.

Sylochelidon caspia	Caspian tern
*Thalasseus cristatus	Torres Straits tern
poliocercus	Bass's Straits tern
Sterna melanorhyncha	Southern tern
Sternula nereis	Little tern
Hydrochelidon leucopareia	Marsh tern
Onychoprion fuliginosa	Sooty tern
panayensis	Panayan tern
Anous stolidus	Noddy tern
melanops	Lesser tern
* leucocephalus	White-capped tern.

FAM. PROCELLARIDÆ.

Diomedia exulans	Wandering albatross
cauta	Shy albatross
culminata	Culminated albatross
melanophrys	Black-eyebrowed albatross
Phœbetria fuliginosus	Sooty albatross
Ossifragra gigantea	Great petrel
Adamastor cinerea	Great grey petrel
Pterodroma Solandri	Solander's petrel
Æstrelata leucocephala	White-headed petrel
leucoptera	White-winged petrel
Halobœna cærulea	Blue petrel
Puffinus nugax	Allied petrel
Nectris brevicaudus	Short-tailed petrel
Thiellus sphenurus	Wedge-tailed petrel
Thalassoica glacialoides	Silvery-grey petrel
Darpion capensis	Cape petrel
Prion turtur	Dove-like prion
ariel	Fairy prion
Bankii	Bank's prion
vittatus	Broad-billed prion
Procellaria nereis	Grey-backed storm petrel
Oceanites oceanica	Yellow-webbed storm petrel
Fregetta melanogaster	Black-backed storm petrel
grallaria	White-bellied storm petrel
Pelagodroma fregata	White-faced storm petrel
Halladroma urinatrix	Diving petrel.

FAM. PELICANIDÆ.

Pelicanus conspicillatus	Australian pelican
Phalacrocorax Novæ-Hollandiæ	Australian cormorant
varius	Pied cormorant
leucogaster	White-breasted cormorant
melanoleucus	Little cormorant
stictocephalus	Little black cormorant
Plotus Novæ-Hollandiæ	New Holland darter
Sula australis	Australian gannet
cyanops	Masked gannet
* fiber	Brown gannet
* piscator	Red-legged gannet.

FAM. PODICIPEDÆ.

Podiceps australis	Australian tippet grebe
nestor	Hoary-headed grebe
gularis	Black-throated grebe.

FAM. SPHENISCIDÆ.

Eudyptula minor	Little penguin.

MINES AND MINERALS OF SOUTH AUSTRALIA.

By J. B. Austin, Esq.

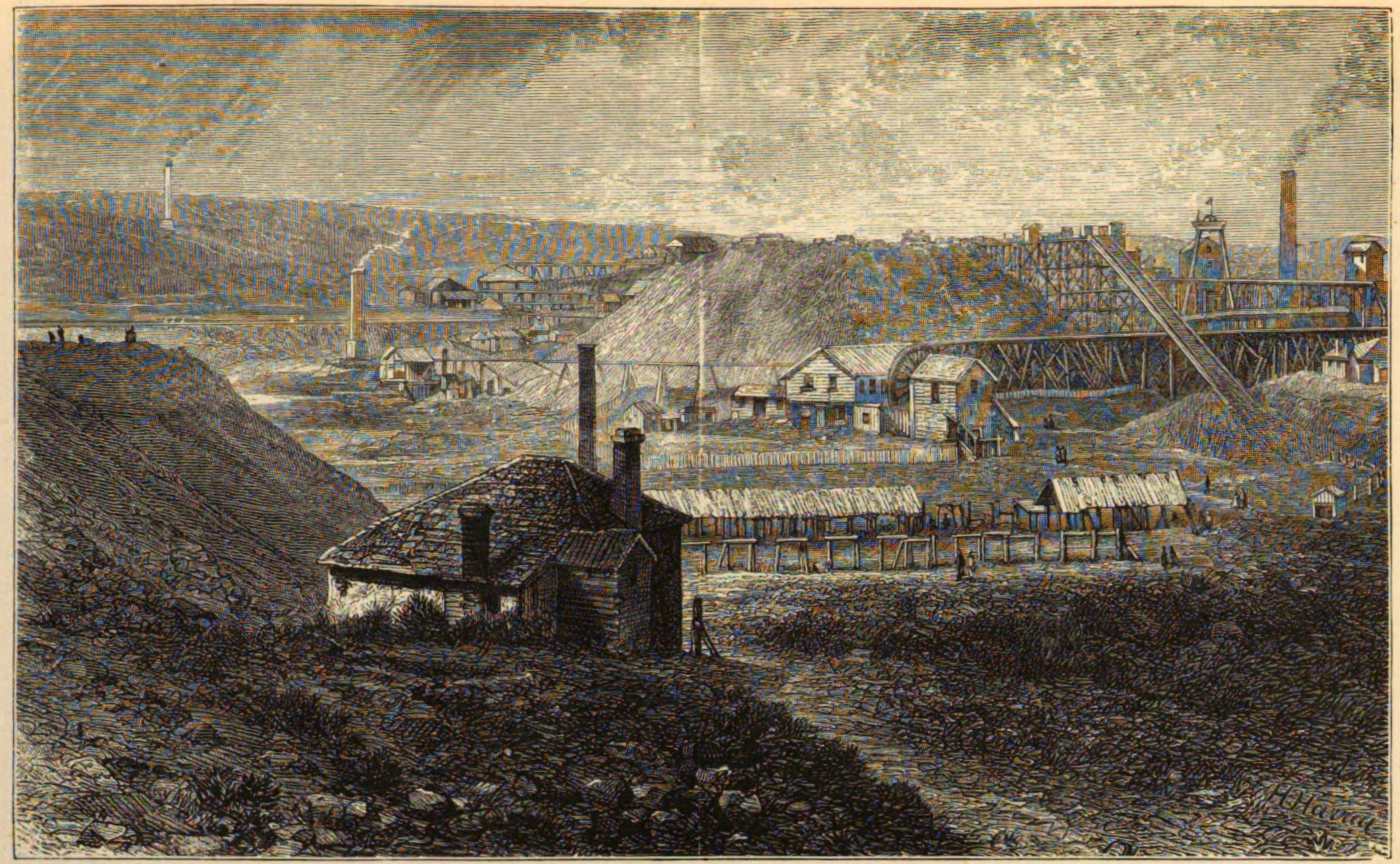
The vast mineral deposits (existing over thousands of square miles of country) in the Colony of South Australia have, for the past thirty years, contributed very largely to our national wealth. At times the mineral products of the Colony have been the highest in point of value of any of our staples; but they have for some years past taken the third place—wheat now ranking first, and wool second.

The history of mining in the Colony dates from the year 1843, when the Kapunda Mine was discovered on Captain Bagot's sheep run, fifty miles from Adelaide. In January, 1844, about ten tons of rich copper ore were sent down from the mine, and caused considerable excitement. In 1848 the first steam-engine commenced to pump the water from the mine, the depth of which had at that time reached nearly twenty fathoms. Subsequently the workings have been carried down to nearly four times that depth. In December, 1849, the smelting of the ores was commenced, and they were reduced to regulus, thus effecting a great saving in cartage and freight. More recently the production of fine copper, in place of regulus, was for many years successfully carried on. The quantity of ore raised since the opening of the mine until it was made over to an English Company, averaged 2000 tons a year, giving an average produce of about 19 per cent. of fine copper. The Kapunda Mine was the means of the establishment of one of the principal provincial towns in the Colony, and which formed the nucleus of a large and thriving population.

The Burra Mine was discovered about two years after the Kapunda, and at double the distance from Adelaide—100 miles

north of the city. In the year 1845, one hundred miles north was considered rather a formidable journey, but the astounding reports of the wonderful richness of the new mine induced many persons of all classes to undertake the trip, in spite of the hardships and privations to be experienced. The "Special Survey" of 20,000 acres requisite to secure this valuable property according to the land regulations of the period was taken up on 16th August, 1845, and six weeks after the first shot was fired, blasting a large mass of rich ore, with which several bullock drays were loaded and dispatched to Port Adelaide. For many years the carriage of stores, machinery, &c., to the mine, and of ore to the Port, was done entirely by bullock drays, and the traffic on the Burra road was something enormous. When it is remembered that the journey under most favourable circumstances would occupy a bullock team from eight to ten days, and more frequently longer, and that there was a constant stream of about 800 teams on the road, some idea may be formed of the traffic. When we add to this the facts that each team consisted of eight bullocks, and that for the first six years of the mine's existence nearly 80,000 tons of ore, or 13,000 tons a year, were sent to the Port and shipped to England, the magnitude of the interest becomes apparent. An immense deposit of exceedingly rich ore—red oxide, malachite, and blue and green carbonates of copper—was found on the surface, and at first the removal of it was more like quarrying than mining. Some thousands of tons were taken away before any very great depth was sunk in the shafts. Subsequently shafts and drives were sunk and extended, until in the aggregate the galleries measured some *miles* in length. But the sinking was not carried down to a greater depth than seventy-five fathoms.

For some years past the yield of ore has been but small, but under the vigorous management of Captain Sanders efforts are being made to clear out some of the old workings, and to open up new ground, and the Captain is sanguine of ultimate success. For several years upwards of 1000 persons were employed on the mine, and some five or six townships sprang up in the neighbourhood, containing a considerable number of



BURRA BURRA MINE, LOOKING SOUTH.

inhabitants besides the miners and their families. The Burra is now connected with Adelaide by railway.

The total quantity of ore raised from the Burra Mine during the twenty-one years from its commencement was 215,132 tons, giving an average produce of 22 per cent. of fine copper, worth over £4,000,000. The total amount expended by the Company was £1,982,005, of which no less than £1,568,859 represents wages. The gross profits amounted to £882,436, of which £776,160 was paid to the shareholders in fifty-five dividends, or £315 on each share of £5. In years gone by many thousands of pounds' worth of ore in fine particles was lost by being washed away in the creek, for want of means to save it. More recently thousands of tons of this waste material have been recovered and passed through jiggers and other machines for saving the ore.

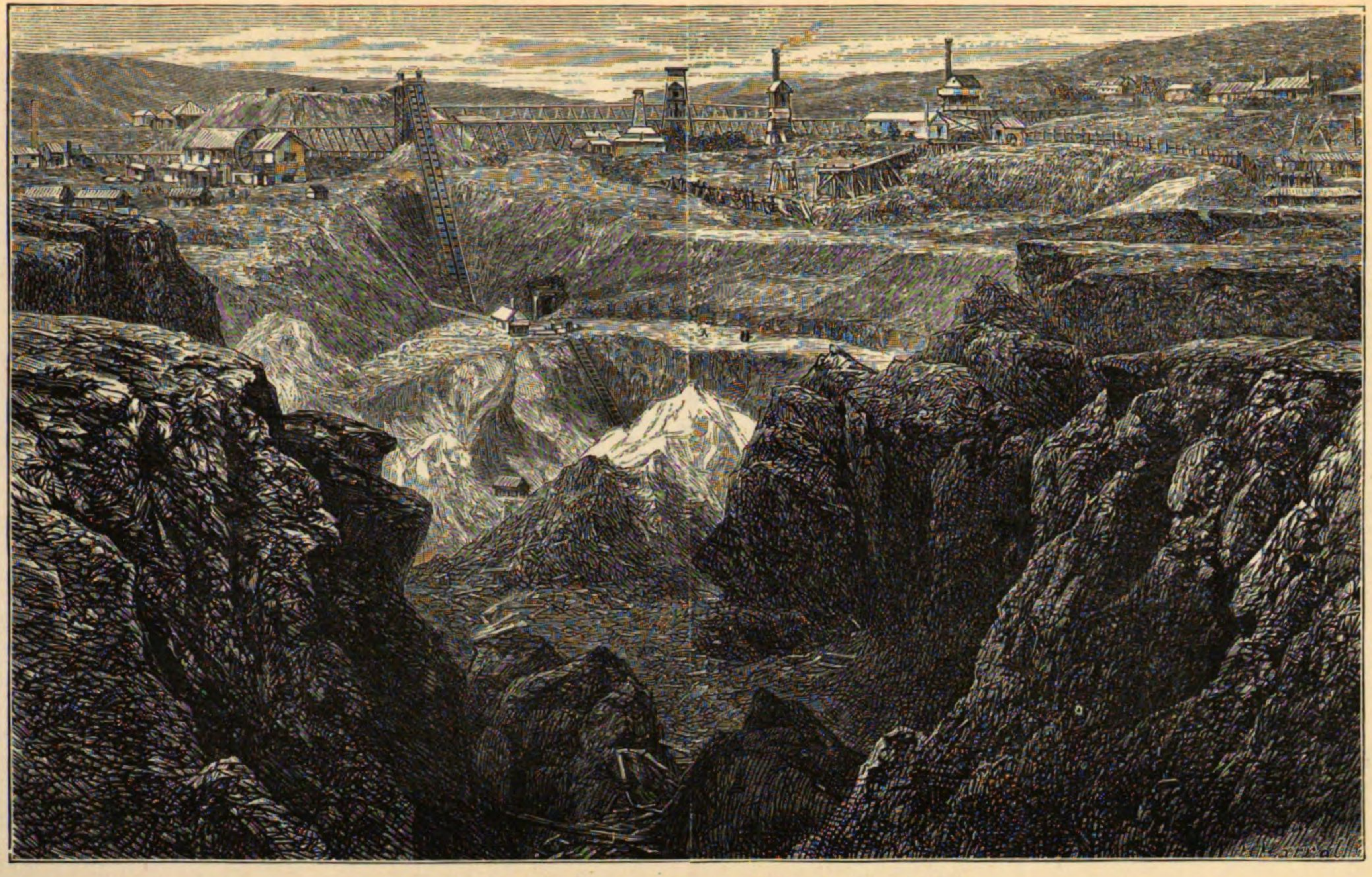
The Burra Mine was for many years one of the richest in the world, and its discovery saved the Colony from impending ruin after the terrible crisis of 1842. For sixteen years the Burra Mine was without a rival, as to the vast extent and richness of its deposits of ore. But in 1860 the discovery of the Wallaroo, and shortly after of the Moonta Mines, on Yorke's Peninsula, bid fair to disprove the often repeated saying that "there was only one Burra in the Colony." Although the Wallaroo Mines promised to turn out well, it was many months before the proprietors felt sure that their enterprise would not prove a losing one. A very large amount of capital was expended by the wealthy firm of Elder and Co. and Mr. W. W. Hughes, until the mine account stood with above £80,000 on the debit side. A few months after this, however, their pluck and perseverance were rewarded by rich discoveries of ore, which ensured profitable results from the large outlay incurred. The development of the mine now proceeded so rapidly as to induce the proprietors to erect smelting works at Wallaroo Bay, about five miles from the mine, for the reduction of the ore. Since 1862 the progress of the Wallaroo Mines has been very encouraging and satisfactory. The lodes in some parts of the mine are extraordinarily large and productive, measuring from ten to thirty feet in width of nearly solid ore,

worth about 12 per cent. of fine copper, and producing as much as sixty tons of ore to the fathom. The general run of the lodes, however, is from five to ten feet in thickness.

The total number of miners and labourers employed in the Wallaroo Mines is 833. The rate of wages is as follows:—Tributers, £2 2*s.* per week; tutworkmen, £2 per week; underground and surface labourers, £1 13*s.* per week; boys, from 4*s.* 6*d.* to 18*s.* per week. In connexion with the Wallaroo Mines, extensive smelting works were erected at Wallaroo Bay, and are probably the largest and most complete in the Southern Hemisphere. They comprise thirty-six furnaces and twenty-one calcining kilns, where 210 men are employed. The same proprietary have another smelting establishment at the Hunter River, in New South Wales, where they have erected twenty-one furnaces, and employ 101 men. By this arrangement the vessels which bring coal from New South Wales to Wallaroo take back copper ore to the Hunter River smelting works, so that a saving of freight is effected. During the fifteen years since the opening of the Wallaroo Mines, the total quantity of ore raised has been 290,669 tons of 21 cwt., but the average of the first five years was under 8000 tons, while the average of the five years ending 1874 was over 26,000 tons. The total quantity of copper made at these smelting works is 58,777 tons up to 1874. This includes a portion of the produce of the Wallaroo Mines, and of 197,394 tons purchased from the Moonta and other mines.

The country in the neighbourhood of the Wallaroo Mines being evidently metalliferous, numerous other claims were taken up in the vicinity, and a great deal of work was done with the view of finding payable copper mines. In some instances good lodes were struck, and worked for a few years with fair results; but of all that were opened only three, besides the original Wallaroo Mine, are being worked with anything like payable returns. These are the Devon Consols, the Kurilla, and a more recently discovered mine, the Doora. This last is the property of Mr. W. W. Hughes, and is yielding large quantities of payable ore.

About a year after the discovery of the Wallaroo Mines, a



BURRA BURRA COPPER MINE. (*View looking North.*)

still more valuable find was made eleven miles to the south-west, and two from the sea-coast. A quantity of small stones of green carbonate of copper being found on the surface of the ground, some pits were sunk, and a fine lode of ore was cut at a small depth. This was the commencement of the now world-renowned Moonta Mines. Several eighty-acre sections were secured by the Messrs. Elder & Co. and Mr. Hughes, and subsequently the Moonta Mining Company was formed. The 1600 acres of mineral land now held by the Company is the richest mineral property in the Colony, and not far from being the richest in the world. Since the first discovery several very rich and productive lodes have been cut, the most recent being a splendid course of fine yellow ore, four feet in width, at the depth of 100 fathoms. This lode alone will give employment to a large number of persons for many years to come.

During the first twenty months after the opening of the Moonta Mine 8000 tons of ore, averaging nearly 25 per cent. of fine copper, were raised, and dividends amounting to £64,000 were paid from the proceeds. During this early period of the mine's existence—in September, 1862—a large quantity of ore being required for shipment at Port Wallaroo, eleven miles from Moonta, 1700 tons were delivered in nine days by means of bullock drays. On another occasion, since the construction of the railway between Moonta and Wallaroo, forty tons of malleable or native copper were sent away in one train of ore trucks by rail. There are twenty-seven shafts on the mine, all in active work; the least in depth is twenty-seven fathoms, and the deepest 143 fathoms. The others vary from about 75 to 115 fathoms, and are for the most part yielding profitable returns. The last report from the mine states: "At the 130 fathoms level the lode is turning out seven tons of 20 per cent. ore per fathom. In a winze below the 115 fathoms level (in another shaft) the value of the lode is five tons of 25 per cent. ore per fathom. . . . At the 100 fathoms level the lode has turned out on the average six tons or 18 per cent. ore per fathom," and so on. In some places we read the lode is poor, turning out only one ton of 16 per cent. ore per fathom, &c. But the great productiveness of the mine is seen from the fact

that the average yearly returns from the commencement have been 18,220 tons of ore (twenty-one cwt. to the ton), of an average yearly value of £197,270 11*s.* 3*d.* The present rate of production is nearly 2000 tons per month, the average produce of the ore being about 20 per cent. of fine copper. During the half-year £32,000 has been paid in dividends. This notice of the Moonta Mine may be appropriately closed by the following statistics for the fourteen years since the mine was opened:—

Total ore raised (twenty-one cwt. to the ton)	255,089 tons 1 cwt.
Amount realized on ore sold	£2,761,787 18*s.* 1*d.*
Working expenses	£1,710,906 9*s.* 6*d.*
Expended on buildings and plant.....	£137,608 3*s.* 9*d.*
Dividends paid to shareholders.....	£928,000.

The total number of hands at present in the employ of the Company is 1525, including eighteen officers in the mine, and three in the Adelaide office.

There are several mines in the neighbourhood of the Moonta, which have for some years been worked with more or less success. The Yelta is the oldest of these, and it has turned out a considerable quantity of ore. The Hamley and Paramatta mines have done rather better, and recently have shown great improvement; the latter has paid dividends, and the former is about to do so. They are both very valuable properties. Some other adjacent mines, as the North Yelta, the Mid-Moonta, &c., are being worked with fair prospects of success.

In two or three localities, near the River Murray, copper has been found and mines opened. At Callington, near the Bremer, and about thirty-six miles from Adelaide in the direction of the Murray, a copper mine has been worked for many years with a moderate degree of success. There are also several other mines in the neighbourhood which have turned out a considerable quantity of copper. A few miles from this there is a remarkable mine, the Wheal Ellen, about three miles from the Town of Strathalbyn. It was originally worked for silver-lead, and some fine lodes of galena were opened. About 2000 tons were raised, yielding a good percentage (about 70 per cent. of lead), and 90,000 ounces of silver, besides a proportion of gold, varying from one to two ounces to each ton of pig lead.

A large quantity of auriferous gossan is found in this mine, and the assay of samples sent to England gave at the rate of from four to six ounces of gold to the ton.

In another silver-lead mine near Normanville, on the south-west coast, gold at the rate of two ounces to the ton was obtained from the lead.

At the depth of thirty fathoms, in the Wheal Ellen, a fine lode of red oxide of copper was discovered, and in this part of the mine, at any rate, the lead seemed likely to give place to the copper. This mine, like many other promising mineral properties in the Colony, is at present idle; but if labour were more abundant, it might probably be worked at a good profit. The gold alone ought to pay for extracting.

The most extensive mineral district in the Colony is that lying to the north, north-east, and east of Port Augusta. It has, for convenience of description, been divided into four large districts. The central, comprising the following mines :— The Blinman, Sliding Rock, Mount Rose, Warrioota, Vocovocana, Mallee Hutt, Mount Emily, &c. The Mount Plantagenet district, comprising the Mount Craig, Kanyaka, Willow Creek, Prince Alfred, Matawarangala, and other mines. The Western, comprising the Beltana, Lake Torrens, Mount Deception, Wirtaweena, Mount Lyndhurst, &c. And the Northern, including the Yudanamutana, the Daly, and Stanley mines, &c. That portion of the country is for the most part ill-adapted to agricultural purposes, on account of the dryness of the climate, the nature of the soil, and the distance from a market. It is, however, good pastoral country, and abounds in vast mineral wealth. Enormous lodes of the richest iron ore may be seen rising high above the surface of the ground. Huge lodes of copper are traceable for miles through the country, and in some places the green ore may be seen for a considerable distance, though generally speaking the nature of the ore is only discovered on a closer examination. In certain parts the copper ore lies scattered in quantities over the ground, like broken road metal. Occasionally a huge "boil" of rich ore is found on some elevated part of the lode, as at the Yudanamutana and the Nuccaleena mines, from the latter of which

600 tons were quarried from near the surface. Ores of 60 and 70 per cent. are frequently found cropping out above ground, consisting of red oxides and rich grey and other ores. Sometimes green and blue carbonates, green muriates and malachites are met with. A common form of copper ore in the North is a brown liver-coloured ore, largely mixed with iron, but containing from 30 to 40 per cent. of fine copper. Crystallized red oxide and ruby copper, also malleable or virgin copper, are frequently found.

The extent and richness of the mineral deposits in the North are almost incredible to those who have not seen them; but hitherto the high cost of cartage and labour has operated very much against their development. If a grand trunk line of railway were constructed at least 200 miles north, to near Yudanamutana, leaving the mining companies to connect their properties with it by branch lines or wire tramways, the one great obstacle to the successful working of the mines would be removed. Such a railway is in contemplation by the present Government, and when carried out, it will probably do more to advance South Australia than any public work yet undertaken in the Colony.

The opinion has sometimes been expressed, with reference to our northern mines, that the ore will not hold down to any depth. In one or two instances there would seem to have been some little warrant for such an opinion, but there are several other cases showing that it is by no means the rule. In the Yudanamutana and Blinman Mines, regular, well-defined, and productive lodes were worked to a considerable depth without showing any signs of running out. In other mines also, as the Mount Rose, the Kanyaka, and the Daly and Stanley Mines, the nature of the country as well as the appearance of the lodes, at a depth of ten to fifteen fathoms, would warrant every expectation of their proving permanent. It may sometimes happen, as at the Nuccaleena Mine, that an immensely rich deposit of ore on the surface has left the lode poor for some fathoms below, and the country becoming hard, the lode has got pinched, but probably at a greater depth it would "make" again.

A very remarkable mine is being worked at Sliding Rock Creek, about thirty miles north of the Blinman. It contains a very large quantity of malleable copper in a finely divided state, and mixed with a kind of clay, which is easily worked. The stuff as raised does not contain more perhaps than 5 per cent. of copper, but by the aid of puddlers, jiggers, &c., it is easily dressed up to 75 per cent. Water being plentiful, the dressing operations can be carried on without difficulty. The depth of the workings is at present thirty-five fathoms, and there appears to be a large quantity of native copper and rich oxides in the mine. The total number of hands employed at present is about 120, but probably more will be put on shortly. Smelting works have been erected on the mine, and some smelting done.

It may be mentioned, also, that the English and Australian Copper Company have smelting works at Port Adelaide and at Newcastle (in New South Wales). . Each of these establishments has twelve furnaces, with room for extension, when a larger supply of ore is obtained from the working of the mines in the North and elsewhere. The works at Port Adelaide smelt from 7000 to 8000 tons of copper ore per year, using from 10,000 to 12,000 tons of coal. At Newcastle they smelt about 5000 tons of ore. The quantity of fine copper turned out is about 3000 tons a year from both establishments, and the total number of hands employed is about 140. The fire clay used in the furnace is obtained from the Company's property at the Burra. The Company is under the management of Mr. E. Cooke, M.P., Mr. V. Laurence being submanager and accountant, and is paying dividends at the rate of ten per cent. per annum.

From personal inspection of the northern mines, the writer of this article holds a very strong opinion that when railway communication affords facilities for working them, which do not at present exist, the mineral wealth of that part of the country will be developed in an extraordinary degree. The ore is generally rich, and the ground easy to work. A large extent of the country presents no serious engineering difficulties in the way of railway construction.

In an article like this it is not necessary to enumerate all or even a large proportion of our mines. It may be stated that mineral deposits of greater or less richness are very widely diffused throughout the Colony. These deposits have been traced over an area of country extending 600 miles from south to north, and 250 miles from east to west. The mineral that has been most largely and profitably worked is copper; and during three years, ending December 31st, 1862, when a mining mania was at its height, no less than 1576 mineral sections, of eighty acres each, had been taken up.

Our deposits of iron are also of wonderful richness and enormous extent, but, owing to the absence of coal, and the high price of labour in the Colony, they have been but little worked. Native iron has been found so pure that it has, without any preparation, been welded on to a piece of manufactured iron, and stood well. An attempt was made, about two years since, to undertake the smelting of iron in the southern part of the Colony, where certain facilities, as fuel, lime, &c., existed in close proximity to exceedingly rich ore. As far as concerned the production of first-class pig iron, and its subsequent manufacture into wrought iron and steel, the attempt was highly successful, but owing to two or three hitches at starting, the shareholders in the company which had been formed lost heart, and the project was for a time abandoned. Several of those who first took the matter up, however, have still great faith in the ultimate success of iron smelting in South Australia, and as our population increases, and other favourable circumstances arise, we may expect to see this important industry revived.

Lead ore also abounds in the Colony, and contains a proportion of silver, in many cases, as high as fifty and even sixty ounces to the ton of galena. For many years, our lead mines were worked, but they were not considered sufficiently remunerative to warrant the continuance of operations. If however, at some future time, circumstances should enable the ore to be raised, or the metal extracted at less cost than at present, there is abundance of galena to be found in South Australia. Silver ore yielding as high as thirty per cent. of silver has been found, and some rich ore is known to exist on

private property, but the largest attempt to work a silver mine in the Colony proved a failure.

Besides the metals already mentioned, many others have been met with. Tin has only been found in small quantities. Manganese exists in certain localities, associated with a small percentage of cobalt; and a very large deposit of manganese of 80 per cent., showing cobalt, is reported in the north. Plumbago is found in the Port Lincoln District and elsewhere, and zinc occurs with copper and other ores.

Bismuth is found in various parts of the Colony, some hundreds of miles distant from each other—on the western side of Spencer's Gulf, above Franklin Harbour; in the Stanley Mine, 230 miles north of Port Augusta; and near Balhannah, sixteen miles to the south-east of Adelaide. The Balhannah Mine contains an exceedingly rich deposit of bismuth, and in other respects claims to be one of the most remarkable mines in the world. Copper was first found in considerable quantities, associated with bismuth, and about £25,000 worth was raised. Then gold made its appearance, and after the bismuth was smelted, it was found to contain on an average about five ounces of gold to the hundredweight of metal. Some of the specimens from this mine are exceedingly curious and beautiful—showing copper, native bismuth, and gold in the same stone. Cobalt in small quantities, and antimony and plumbago also exist in the ore from this mine. About £7000 worth of bismuth has been disposed of at prices ranging from 4*s.* to 11*s.* per pound. The ore contains from 20 to 80 per cent. of pure metal, and some pure (native) bismuth is also found. The sinking has been carried down to the depth of fifty fathoms, where the lode is very wide, but "dredgy," yielding about a ton of bismuth to the fathom.

Although South Australia was the first of the Australasian Colonies in which gold was discovered, gold mining has hitherto made but little progress here. There are now, however, three or four gold mines giving such promises of success as to make it appear not impossible that in a few years we may have extensive reefs of the precious metal developed. Gold was found in the hills, about twelve miles from Adelaide, about

the year 1844, but at the time the finder was not aware of the nature and importance of his discovery. About the year 1852–3, alluvial diggings were discovered in the hills, near Echunga, about twenty miles south-east of Adelaide. The goldfield did not prove very rich, nor of any great extent, but a few hundreds of diggers did tolerably well by steady work, and some small fortunes were realized by the more successful. For many years a number of plodding people made a fair living at these diggings, and in the aggregate a considerable amount of gold—about £600,000—was obtained. It is the opinion of several persons of experience that deep sinking in this locality would be very likely to result in the opening up of rich leads. Gold-bearing reefs are known to exist in these diggings; and another inducement for trying the ground is the existence there of a deposit of diamonds, over a hundred having been unearthed at various times. It is very difficult to ascertain how many, or what value of precious stones have been found on the Echunga diggings, but actual knowledge enables me to speak confidently of over one hundred, varying in value from £1 to £20 for a single diamond. Even this return should be sufficient to stimulate the search for more.

Some years later another goldfield was discovered a few miles farther south, at Jupiter Creek, where a good deal of gold was obtained, including a few respectable nuggets, the largest weighing 12 oz. Farther away still, in a south-easterly direction, gold has been found at the Meadows, but the wet nature of the ground has proved a great hindrance to working. More recently another patch of auriferous country was opened and successfully worked, about three miles north-west of the old Echunga diggings, about a mile from the village of Hahndorf, and within the same distance of the Onkaparinga River, which has been proved auriferous in many parts of its course. Some very good finds were made, and one or two promising reefs opened. A few diggers are still at work on all these diggings, and one at least of the reefs is being worked with very good prospects.

About 1869 a goldfield was discovered in the Barossa

Ranges, ten miles east of Gawler. For three or four years it was worked with a fair amount of success, and proved in places to be rich in the precious metal. But little is being done there now, as the payable ground was limited in extent, and no fresh discoveries of importance were made. However, the prospecting which was carried on in the neighbourhood resulted in the discovery of a payable quartz-reef, where the Lady Alice Gold Mine has been successfully worked for about two years. A singular feature in this mine is that a rich lode of copper ore was cut within 100 feet from the surface, and the gold is frequently seen sticking in the copper. It was thought that the copper would "kill the gold," but up to the present time both metals appear to have improved as a greater depth has been reached. The returns of gold have varied considerably—from 7 dwts. to 1½ oz. to the ton of quartz. During the first twelve months 3049 tons of stone were crushed, yielding 1913½ oz. of gold, the value of which was £7415, being £683 more than the total paid-up capital of the Company. About £500 worth of copper was also raised. The profits for the first year, over working expenses, amounted to £1895 12*s.* 5*d.* On a subsequent occasion, after some very rich crushings, the profits for five weeks were £1400. At the present time operations are being extended, and machinery of double power has been erected. Other mines are being worked on the same line of reef, with good prospects of success.

Another locality where a very rich deposit of gold was found is near Mount Pleasant, and thirty-one miles east from Adelaide. A few inches below ths surface at "Scott's Gold Mine" the soil was rich in the precious metal, and many loose stones of quartz were turned up containing lumps of gold. One stone, about half the size of a man's head, contained thirty ounces of gold! Upwards of £2000 worth was obtained in a short time, after which a Company was formed with the view of carrying on more extensive operations, and searching for the reef supposed to exist on the land. The Company purchased the lease of the Section for twenty-one years, and expended some £3000 without obtaining any great return, the gold produced only amounting to £510 in value. Recently, however, a promising-looking quartz leader has been followed

down to a depth of eighty feet, where it has run into a good solid reef three feet thick. From the wonderful richness of the stuff found on the surface, and the nature of the strata below, it is the opinion of experienced persons that a very payable reef should be found here. Other similar deposits of gold were discovered in the same neighbourhood, and within a mile of Scott's.

The best-looking and richest gold reef yet found in the Colony is at Waukaringa, 200 miles north of Adelaide. It is well defined, and, geologically speaking, in excellent gold country, and extends for many miles nearly east and west. Sufficient work has been done to prove the reef to be gold-bearing—at least at intervals—for a length of seven miles, and forty miles to the eastward in the same line of country gold has been found in the reef. Three good mines have been opened, and the value of the reef proved in them for above a mile in length. Here at a depth of seventy feet the reef varies from 5 feet to 18 feet in width. The Alma Mine has during little more than six months, and in less than four months' actual work, with the battery (ten head of stamps) turned out above £5000 worth of gold, the stone averaging all through from one and a quarter to one and a half ounce to the ton. A great deal of the stone might be picked so as to get at least five ounces to the ton from a number of tons. The matrix is chiefly a kind of loose rotten-looking ironstone, mixed with quartz. On the Balaclava Company's claims, 700 yards to the east of the Alma, the reef (over eight feet wide), carries solid quartz for about half its thickness, and ironstone in the other half.

There are several other localities in various parts of the Colony where very promising discoveries of gold have been made, but where the amount of work done has been insufficient to fairly test the value of the deposits. The belief, however, is gradually gaining ground that the precious metal is far more extensively diffused throughout South Australia than has hitherto been thought to be the case.

From the progress of gold discovery in the Colony during the past four or five years, it is highly probable that before long we may find numerous reefs that will pay for working.

Unfortunately too much money has been wasted in the Colony, either through the ignorance or design of persons engaged in mining operations, otherwise the sums expended, had they been judiciously applied, would have produced in many cases far better results. The constant practice of "mining on the Exchange" interferes greatly with the legitimate work of developing the vast mineral resources of the Colony, and even good and payable mines have been nearly ruined by this reprehensible practice.

Allusion has been made to the finding of diamonds on the Echunga goldfields. Other precious stones have also been found in the same neighbourhood, and a number and variety of gems in different parts of the Colony. One of the Echunga diamonds is unique as a specimen of perfect crystallization. Forty-eight facets may be distinctly counted by the aid of a magnifying glass, and are as regular as though they had been cut by a lapidary. This diamond weighs one and a half carat, and is of fine brilliancy. It is the property of Mr. H. Henzenröder, a *connoisseur* in gems. Other stones and gems which have been found in the Colony may be enumerated as follows: Amethyst, agate, beryl (both precious and common), bloodstone, carnelian, cairn-gorm, calcedony, emerald, garnet, lapis-lazuli, onyx, opal (both precious and common), spinal ruby and sapphire, sardonyx, and topas. Of the last-named some fine yellow specimens have been obtained, equal to the Brazilian, and many colourless stones; but these are generally inferior in point of hardness. The Anglican Bishop of Adelaide, some time since, had a pastoral staff presented to him set with a number of native gems, including most of those named above.

Other useful mineral productions found in South Australia are:—Antimony, asbestos, baryta, bitumen, cobalt, calcspar, dolomite, fireclay, fluorspar, fuller's-earth, gypsum, kaolin clay, lignite, marble, magnesia, magnesian limestone, mica, mercury, nickle, ochre, platinum, salt, schorl, slate (very fine, both roofing and paving), soapstone, native sulphur, tellurium, tourmaline, wolfram, &c.

In the South-East, near the Coorong, there is a remarkable substance found on the surface; it occurs in tough thin cakes, and from its resemblance to india-rubber it has been called

mineral caoutchouc. These cakes vary in thickness from that of a sheet of coarse brown paper to an inch. Many tons of it lie scattered over a considerable area of ground. A quantity of the substance was collected and brought to Adelaide, where a brilliant illuminating kerosine oil was obtained from it by distillation. This oil was found to be superior to the best American, in at least one very important quality, that of being non-explosive, and not becoming inflammable under a temperature of 150° Fahrenheit, whereas the Amercan oil ignites at 108°. The soil in the neighbourhood where it is found appears to be impregnated with inflammable oil, which can be extracted by means of distillation. Borings have been commenced, but not carried to any great depth; the indications met with, however, were very encouraging, as oil was found floating on the water in the holes. Shale, dolomite containing pectens, and other fossils, have been met with in sinking. A few gentlemen have secured from the Government a fifteen years' lease of 10,000 acres on which to search for petroleum, and they are about to seek the assistance of English capital to carry on the work.

The following brief summary of our mineral exports at different periods will help to show the progress made in this respect:—

		£
In 1845,	the first year when copper was exported from the Kapunda and Burra Mines, the value was stated at	19,020
„ 1846	the export of minerals amounted to	143,231
„ 1856	„ „ „	408,042
„ 1866	„ „ „	824,501
„ 1874	„ „ „	700,323

It should, however, be explained that the greater value of the mineral exports in 1866 arose from the higher price of copper in that year, and not from the greater quantity produced: in fact the quantity was much less in 1866 than in 1874. In the former year the exports amounted to 6463 tons, 12 cwt. of copper, and 16,824 tons of ore, while in 1874 they were 6629 tons 7 cwt. of copper, and 22,854 tons of copper ore. In 1864 the value of the lead exported was £13,318, and in 1866, £11,318, since which time it has almost ceased. Our production of gold is probably over £25,000 a year.

STATISTICAL SKETCH OF SOUTH AUSTRALIA.

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CONTENTS.

Geographical Position — General Government — Local Government — Population — Births, Deaths, and Marriages — Immigration and Emigration — Education — Public Worship — Charitable Institutions — Administration of Justice — Land Transfer — Revenue and Expenditure — Loans for Public Works — Banking — Savings Banks — Land and its Occupation — Agriculture — Pastoral Occupation — Manufactures — Import and Export Trade — Staple Products: Wheat, Wool, Copper — Shipping — River Murray Trade — Railways — Roads — Waterworks — Postal Communication — Telegraphs — Rates of Wages — Prices of Provisions, &c. — Meteorological.

The following paragraphs furnish a statement of facts, based upon official records, showing the present position of South Australia, and the progress made from time to time since her colonization in 1836—not forty years ago. Exhaustless natural resources, a salubrious climate, indomitable industry and enterprise in her people, and a freedom and stability in her institutions, have together placed South Australia in the high rank she occupies amongst the dependencies of the British Crown.

GEOGRAPHICAL POSITION.

That portion of the Continent of Australia bounded on the east by the 141st degree of east longitude, on the north by the 26th degree of south latitude, on the west by the 132nd degree of east longitude, and on the south by the Southern Ocean,

was constituted a British Province by Act of Parliament 4 & 5 William IV. c. 95, under the designation SOUTH AUSTRALIA. The area contained within those limits is estimated to be 300,000 square miles, or 192,000,000 acres, nearly twice and a half that of Great Britain and Ireland. In 1861, the territory known as "No Man's Land," about 80,000 square miles, lying between the boundaries of South and Western Australia, was added, by Act 24 and 25 Vict. c. 44, making the western boundary the 129th degree of east longitude.

All the country north of the 26th parallel of south latitude, between the 129th and 138th degrees of east longitude, has also been annexed to South Australia, and is known as the Northern Territory. The present northern boundary is the Indian Ocean, latitude 11° S.; the southern boundary, the Southern Ocean, in latitude 38° S. The Province of South Australia covers twenty-seven degrees of latitude, and twelve degrees of longitude, forming, at present, the largest British colony—the area extending over more than 900,000 square miles.

The northern coast-line included in the before-mentioned limits, starting from the 138th degree of east longitude, about 120 miles west of the Albert River, comprises the western shore of the Gulf of Carpentaria, trending northward to Cape Arnheim; thence west to Port Essington (latitude 11° S.), thence south-west across Van Diemen's Gulf, into which the Adelaide River (Stuart's furthest) flows, opposite Melville Island; and thence to longitude 129° E., Cambridge Gulf, into which, about 100 miles within the boundary, the Victoria River flows. The western boundary is in the 129th degree of east longitude, running from Cambridge Gulf to a point west of the head of the Great Australian Bight, in latitude 32° S., whilst the eastern boundary runs northerly on the 141st degree of east longitude to latitude 26° S., thence west to longitude 138° E., thence north to the Gulf of Carpentaria.

The southern coast-line extends from latitude 38° S. longitude, 141° E. to latitude 31° 45′ S., longitude 129° E., and from its peculiar configuration presents a sea-board of over

2000 miles in length. Between the eastern boundary, near Cape Northumberland, and Encounter Bay, west of the mouth of the River Murray, the coast is generally low and sandy. There are, however, excellent shipping places available for large vessels—among them Port Victor, Lacepede Bay, Guichen Bay, Rivoli Bay, and Port MacDonnell. Westward of Spencer's Gulf is a succession of secure harbours, several of large extent, and with good anchorage for ships of considerable tonnage. Port Lincoln, Smoky, Denial, Venus, Streaky, and Fowler's Bays are important shipping places to the westward.

The coast-line is also deeply indented by two large gulfs—the eastern, St. Vincent's Gulf, running inland to the northward for eighty-five miles, and the larger, Spencer's Gulf, running N.N.E. towards the heart of the colony for one hundred and eighty miles. These gulfs have a mean breadth of thirty and fifty miles respectively, and both taper towards their northern ends. St. Vincent's Gulf is sheltered by Kangaroo Island, ninety miles in length, which lies to the southward of it, leaving two fine entrances, one from the westward through Investigator's Straits, twenty-eight miles broad, and the other from the eastward through Backstairs Passage, eight miles in width.

The principal agricultural and mineral districts of the Colony are contiguous to the two gulfs, the shores of which are seven hundred and eighty miles in length, the greater part being entirely protected from the ocean swell. Numerous outports and shipping places, of which there are over fifty, enable settlers to ship their produce at a very small cost. These gulfs are divided by Yorke's Peninsula, some one hundred and twenty miles long, and twenty miles broad, having large tracts of wheat-growing land, and the principal seat of mining industry.

Situate on the eastern side of St. Vincent's Gulf are the following ports:—Ports Adelaide, Glenelg, Wakefield, Willunga, Noarlunga, and Yankalilla; and on the west, or peninsula side, shipping places at Edithburg, Stansbury, and Ardrossan. The eastern side of Spencer's Gulf is supplied by

Ports Moonta, Wallaroo, Broughton, Pirie, and Port Augusta at the head of the gulf, while Franklin Harbour, Tunby Bay, and Port Lincoln, are on the western side of the same gulf.

A mountain range commences at Cape Jervis, at the eastern entrance to Gulf St. Vincent, and extends in a northerly direction, averaging some thirty miles in breadth, and dividing the waters flowing eastwards into the River Murray and lakes, and westwards into the gulf. The highest point is Mount Lofty, after which the range is named, having an elevation of 2334 feet above sea level. Descending rapidly on the western side, marked by numerous glens and valleys for about three miles, it declines gently over the extensive Adelaide Plains for five miles, to the capital, from thence a plain of six miles (almost level) stretches to the sea-coast.

Opposite the north end of the gulf the range separates into parallel ridges, divided by fertile plains of an average width of eight miles.

On the eastern side of Spencer's Gulf, and about ten miles from its shore, the Hummocks and Flinders Ranges rise to a considerable height, Mounts Remarkable, Brown, and Arden, and other points, being about 3000 feet above the level of the sea. From the head of the gulf the range sweeps easterly and then northerly, and forms a chain of hills extending to latitude 29° 30′. This chain, however, separates into distinct ridges, with wide valleys, generally north and south, intervening. In the south-eastern portion of the Colony there are several volcanic craters, Mounts Gambier and Schanck being the most remarkable; the former being 900 feet high, and having at its base soil of the richest description. Throughout the remainder of the district are low ridges parallel to the coast, with intervening swamps and plains.

ADELAIDE, the capital of the Province, is situate about five miles from the eastern shore of St. Vincent's Gulf, in latitude 34° 57′ S. and longitude 138° 38′ E., and PORT ADELAIDE, the principal port, is about seven miles north-west from the City, and connected therewith by rail.

GENERAL GOVERNMENT.

The Constitution granted to South Australia by Her Majesty, by virtue of Imperial Act 13 and 14 Victoria, c. 59, was proclaimed on the 24th October 1856, on which day the Queen's assent to the Constitution Act, No. 2 of 1855–6, was received in the Colony. Under that Statute the Parliament consists of two Houses—the Legislative Council and the House of Assembly—the former being composed of eighteen members, and the latter, at that time, of thirty-six. In 1873 the electoral districts of the House of Assembly were increased from eighteen to twenty-two, and the number of members from thirty-six to forty-six.

The Legislative Council, which cannot be dissolved by the Governor, is elected by ballot, the whole Province forming one electoral district for that purpose. Each member is elected for twelve years; and every four years the six members who have been longest on the roll of the Council retire. The qualification for a member of the Legislative Council is that he shall have attained the age of thirty years, that he is a subject of the Queen, and that he has resided in the Province for three years. The qualification of a voter for this branch of the Legislature is that he shall be twenty-one years of age, a natural-born or naturalized subject of Her Majesty, and have been on the electoral roll for a period of six months. He must also either be possessed of a freehold of the value of fifty pounds, or of a leasehold of the annual value of twenty pounds, having three years to run, or with right of purchase; or be in occupation of a dwelling-house of the annual rent value of twenty-five pounds. The constitution of the Legislative Council is unaltered by the late amendment of the Electoral Act. The total number of voters for the Legislative Council is 18,445, or forty per cent. of the adult male population.

The House of Assembly, which is liable to dissolution by the Governor, is elected for three years; and of the twenty-two districts represented in it, three return three members each, eighteen two members each, and the other returns one

member only. The Constitution Act prescribes no other qualification as necessary for a member of the House of Assembly than that he shall be an elector. An elector's qualification to vote is that he shall be of full age, and have been six months on the electoral roll. The total number of electors on the roll for the Assembly is 34,404, or seventy-five per cent. of the adult male population.

Responsible Government is carried on by six Ministers, members of the Legislature, who form the Cabinet, and who are *ex officio* members of the Executive Council, advising the Crown, in the person of Her Majesty's representative, His Excellency the Governor of the Province.

The following are the titles of the ministerial officers, viz. :—Chief Secretary, Attorney-General, Treasurer, Commissioner of Crown Lands and Immigration, Commissioner of Public Works, and Minister of Agriculture and Education. Each Minister has control over several departments of the public service, the duties of which are conducted by permanent official heads.

LOCAL GOVERNMENT.

Local self-government was established in South Australia as far back as 1840, in which year the Corporation of Adelaide was constituted; but elective Municipal Institutions only became general during the administration of Sir Henry Young. Most beneficial results have flowed from the adoption of the principle. Under it the people have been taught the lesson of self-reliance, and have cheerfully taxed themselves for the prosecution of public works of general utility, over which the local authorities—a Board of from five to seven members elected by and from the ratepayers of the District—exercise control. Although the State supplements pound for pound all sums raised and expended on public works in the District, the Council have in their hands the entire management of such expenditure, and of all municipal affairs. Without such Councils it would have been difficult to introduce into sparsely populated and unsettled districts many of the

social and political advantages now enjoyed by people resident at considerable distances from the seat of Government.

Corporations have been established in the principal centres of population to the number of sixteen, and ninety District Councils, constituted throughout the settled districts. The total annual rateable value of property is £1,045,711, of which £391,929 is within the limits of Municipal Corporations, and £653,782 is within the boundaries of District Councils. The usual rate declared upon the assessment is one shilling in the pound sterling. The total revenue of these local bodies in 1874 was £125,351, and the amount expended on works of permanent utility £80,945.

The following return of the aggregate assessments and receipts of the several Municipal Corporations and District Councils, and the amount expended on local improvements, affords a reliable index of the steady settlement of the country during the last ten years:—

Year.	Rateable Annual Value.	Receipts.	Expended Local Improvement.
	£	£	£
1865	684,095	75,296	43,185
1870	920,951	86,499	72,865
1874	1,045,711	125,351	80,944

Of the total municipal income, about one-fifth was contributed by the State in the shape of grants, and the expenditure on local improvements of a permanent character was two-thirds of the total receipts.

POPULATION.

INHABITANTS.—The population of South Australia at the close of 1875 was estimated to be 210,442 souls. The last Census was taken on 2nd April 1871, on the same day and in the same manner as those of Great Britain and her other Australian Colonies. A general idea of the social condition of the people at the present time may be gathered from a review of the chief points then inquired into, bearing in mind the fact that whilst the number of the population has increased by one-third, a more than proportionate advance has been made in industrial progress, material wealth, and social prosperity.

Altogether seven enumerations have taken place since the establishment of the Colony—latterly at intervals of five years—as shown in the following table:—

Date of Enumeration.	Population.		
	Males.	Females.	Total.
1844. February 26...	9,526	7,840	17,366
1846. February 26...	12,670	9,720	20,390
1851. January 1	35,302	28,398	63,700
1855. March 31	43,720	42,101	85,821
1861. April 8	65,048	61,782	126,830
1866. March 26	85,334	78,118	163,452
1871. April 2	95,408	90,218	185,626
1875. December 31 (estimated)	107,944	102,498	210,442

In the foregoing table the aborigines are not included. At the Census of 1871 they numbered 3369, so far as could be ascertained.

It will be observed that during the last ten years there has been a numerical increase of population to the extent of 46,990, or nearly one-third. The total population enumerated in 1871 was 185,626, of which 95,804 were male, and 90,218 females. The number at the close of 1875 is estimated, as before said, to be 210,442, namely, 107,944 males and 102,498 females. So close an approximation to equality in the numbers of the sexes is highly satisfactory, and testifies to the settled character of the people.

Distribution.—One of the most important facts brought out by the Census is the way in which the population is distributed throughout the country. A frequent review of the movements of the people is essential to the carrying on of the duties of Government in a country where settlement advances so rapidly that centres of population arise where but a few years before sheep only depastured.

The returns under this head are exceedingly satisfactory, as showing that eighty-five per cent. of the whole number of the people are resident in the country districts, and employed directly or indirectly in the cultivation of the soil, or in the

production of mineral and pastoral wealth. Since 1861 the residents in the city have increased from 18,303 to 27,208, or by forty-eight per cent. During the same ten years the settlers in the country districts have increased from 108,527 to 158,413, or by forty-six per cent.

The table on page 322 shows the number of inhabitants, the number of males and females, the number of houses, and the number of adult males in each county, and in the Province, at the date of the Census of 1861 and of 1871.

In a country where so large a proportion of the people is engaged in agricultural and kindred pursuits, population must be widely distributed. There are, however, in addition to the City of Adelaide, with a present population of over 30,000 (exclusive of suburbs, which may be computed at as many more), other populous townships, viz. Kensington and Norwood, with 5132 inhabitants; Moonta, 4775; Hindmarsh, 3221; Port Adelaide, 2482; Kapunda, 2273; Wallaroo, 1983; Kadina, 1855; Gawler, 1652; Gambierton, 1604; Kooringa, 1561, Glenelg, 1324; and Clare, 1004. There are 20 townships with between 500 and 1000, and 60 with between 200 and 500, and some 150 villages with an average of less than 200 inhabitants.

BIRTH-PLACES.—The returns showing the birth-places of the people indicate a steady increase in the number of the South Australian born and of British birth, as well as, in a lesser degree, of those from British possessions other than the United Kingdom. The native-born element, of course, preponderates, forming 55 per cent. of the population; the next largest class being persons of English birth, who form twenty-five per cent. Ireland has contributed eight per cent., and Germany and Scotland each 4·5 per cent. The proportion of males and females in the settled districts is about equal. There are more English men than English women, and more Irish women than Irish men. Out of 8309 Germans, 4681 are males and 3628 females. Of the 185,626 enumerated in 1871, 102,676 were native-born, 46,752 were of English birth, 14,255 came from Ireland, 8309 from Germany, 8167 from Scotland, 3469 from other British possessions, and 1356 from other foreign

States. The children of German and other colonists from foreign countries are returned as South Australians.

Counties and Pastoral Districts.	Persons.		Males.		Females.		Houses.		Adult Males.	
	1861.	1871.	1861.	1871.	1861.	1871.	1861.	1871.	1861.	1871.
Counties—										
Adelaide	66,238	85,593	32,075	41,454	34,163	44,139	15,292	18,600	14,365	18,318
Gawler	3,784	8,660	1,959	4,715	1,825	3,945	874	1,658	846	2,101
Light	14,980	20,019	7,835	10,329	7,145	9,690	3,036	3,811	3,574	4,546
Stanley	4,835	9,785	2,506	5,301	2,329	4,484	924	1,818	1,130	2,407
Victoria	538	818	320	515	218	303	174	159	200	279
Daly	1,232	12,353	863	6,510	369	5,843	342	2,574	591	2,864
Fergusson	...	576	...	377	...	199	...	122	...	221
Frome	989	1,839	550	939	439	900	273	331	335	438
Hindmarsh	12,502	13,562	6,457	6,857	6,045	6,705	2,542	2,759	2,712	2,651
Sturt	4,546	5,730	2,403	2,942	2,143	2,788	888	1,103	1,015	1,139
Eyre	1,097	2,332	595	1,275	502	1,057	232	457	265	546
Burra	5,483	3,401	2,882	1,750	2,601	1,651	1,225	877	1,348	777
Young	52	80	30	40	22	40	10	14	22	23
Hamley	...	72	...	52	...	20	...	15	...	31
Albert	69	75	42	43	27	32	17	15	19	23
Alfred	...	72	...	47	...	25	...	10	...	26
Russell	257	793	154	457	103	336	60	136	82	211
Cardwell	...	109	...	72	...	37	...	26	...	39
Buckingham	...	228	...	122	...	106	...	42	...	58
MacDonnell	652	779	416	460	236	319	136	184	253	258
Robe	1,477	2,407	816	1,371	661	1,036	250	452	462	672
Grey	3,337	9,445	1,870	5,037	1,467	4,408	610	1,816	1,018	2,346
Flinders	758	1,551	434	823	324	728	217	305	234	369
Total of Counties ...	122,826	180,279	62,207	91,488	60,619	88,791	27,102	37,284	28,471	40,343
Pastoral Districts ...	3,376	4,584	2,285	3,218	1,091	1,366	802	1,032	1,430	2,212
Shipping	628	562	556	530	72	32	...	...	476	423
Northern Territory ...	...	201	...	172	...	29	...	17	...	146
Grand Total of South Australia ...	126,830	185,626	65,048	95,408	61,782	90,218	27,904	38,333	30,377	43,124

CONJUGAL CONDITION.—With reference to the conjugal state, there were, in 1871, 30,002 married males and 30,029 married females. Married women exceed in number the married men in towns, and the reverse is the case in the country districts, where also bachelors predominate. The proportion of bachelors to spinsters at marriageable ages (all above fifteen), is as twenty-one to fifteen, but of adults as eleven to five. The following table shows the number of married, unmarried, and widowed persons, males and females, of the age of fifteen and upwards :—

		Number.
Unmarried ...	Bachelors	21,638
	Spinsters	15,179
Married ...	Husbands	30,002
	Wives	30,029
Widowed ...	Widowers	1,571
	Widows	3,521

AGES.—The proportion in which the number of males and females at the under-mentioned periods of age stood to the total of the Province is as follows :—

AGES.	The Colony.			City of Adelaide.			Rural Pastoral Districts and Shipping.		
	Persons.	Males.	Females.	Persons.	Males.	Females.	Persons.	Males.	Females.
All ages	185,626	95,408	90,218	27,208	12,699	14,509	158,418	82,709	75,709
Under 5	31,450	15,920	15,530	3,992	1,983	2,009	27,458	13,937	13,521
5 and under 15	52,237	26,277	25,960	6,950	3,340	3,610	46,287	22,937	22,350
15 and under 21	20,625	10,088	10,537	3,249	1,350	1,899	17,376	8,738	8,638
21 and upwards	81,141	43,003	38,138	12,997	6,012	6,985	68,144	36,991	31,153

From the above statement it will be seen that in a population of 185,626 souls, seventeen per cent. were infants under five, twenty-eight per cent. were children under fifteen, twelve per cent. youths, and the remaining forty-three per cent. of the whole number were adults.

Taking the number of persons between the ages of fifteen and sixty-five, viz. 98,365, as fairly representing the class upon whom devolves the duty of sustaining the extreme youth and the bulk of the old age of the country, it will be seen that such class forms fifty-three per cent. of the whole population. The man power—that is, all males of fifteen years and up-

wards—numbers 51,271, or but twenty-eight per cent. of the whole people; being three per cent. below the proportion in 1861.

Occupation.—Very full information with regard to the occupations of the people has been obtained at each census, and no returns can be more practically useful than those which show in what direction the labour of the country is chiefly employed. The following classification shows the number under each head in 1871:—

Occupations.	The Province.		
	Persons.	Males.	Females.
Class			
I. Persons engaged in the general and local government of the colony, police, &c. ...	1,495	1,482	13
II. Professional: persons in the learned professions (with their immediate subordinates) not in the Government service ...	645	644	1
III. Professional: persons engaged in literature, fine arts, and sciences	1,575	765	810
IV. Trading: persons who buy, sell, keep, or lend money on goods	4,301	3,960	341
V. Personal offices: persons engaged in entertaining, clothing, and performing personal offices for man	10,802	2,712	8,090
VI. Manufacturing: persons engaged in art and mechanical productions, and in working and dealing in mineral, vegetable, and animal matters	7,849	7,842	7
VII. Mining: persons engaged in	3,338	3,338	—
VIII. Agricultural, horticultural, and pastoral: persons working land and engaged in growing grain, fruit, animals, and other products	24,224	23,606	618
IX. Carrying: persons engaged in the conveyance of men and goods	2,917	2,915	2
X. Persons dealing in food and drinks	1,732	1,672	60
XI. Miscellaneous pursuits: persons engaged in occupations not embraced in other classes	6,060	5,919	141
XII. Independent means: persons of property or rank not returned under any office or occupation	543	368	175
XIII. Persons engaged in domestic offices or duties, and of no specified occupation, scholars, &c....	117,766	38,262	79,504
XIV. Persons maintained at public cost or by the community	944	620	324
XV. Persons whose pursuits have not been specified, or were unemployed, &c.	1,435	1,303	132
Total of the population	185,626	95,408	90,218

Agricultural, pastoral, and horticultural pursuits are those upon which the labour of the majority of the industrial population is bestowed, the number actually engaged therein being 24,224, or forty-three per cent. of the specified occupations of males.

Mining is the next prominent branch of industry. Its importance cannot be judged of by the comparatively small number of persons returned as directly engaged in it. The great extent and richness of our mineral properties afford profitable employment to large numbers of artisans, mechanics, and others, who are returned under the headings "Trades" and "Manufactures," but who are in fact dependant upon the prosecution of mining industry. The total number of miners was 3338 in 1871, 1504 in 1861, and 840 in 1855.

The next most important class of manufacturers, persons engaged in art and mechanical productions and working and dealing in mineral, vegetable, and animal matters, numbers 7849, of whom only seven are females.

The next class in point of importance are persons, chiefly females, engaged in entertaining, clothing, and performing personal offices for man, numbering altogether 10,802.

The trading class amounts to 4301; persons engaged in conveying men and goods, 2917; persons dealing in food and drink, 1732; professional persons engaged in literature and the fine arts, 1575; persons in the learned professions, 645; persons engaged in the general and local Government, police, &c., 1495; persons engaged in miscellaneous occupations not enumerated in the above classes, 6060; and the residue of the population, 120,688, composed chiefly of persons engaged in domestic duties, scholars, &c., including those whose pursuits have not been specified and also persons of independent means.

The following table shows the occupations of the population and the number of persons engaged in them, arranged in numerical order :—

MALES.

Occupation.		Number.
Farm labourers and servants		11,128
Farmers		8,531
Labourers (branch of labour undefined)		5,013
Overseers on stations, stockmen, shepherds, hutkeepers, station labourers		2,500
Miners—Copper	2,100	
Carters, slabbers, engine-drivers, stokers, and others on mines	530	
Gold	319	
Smelters, ore-dressers, &c....	223	
Miners and diggers (otherwise undefined) ...	124	
Lead	42	
		3,338
Commercial clerks, assistants in shops, storemen, &c.		2,057
Builders, carpenters, building surveyors, timber merchants, sawyers, &c.		1,786
Blacksmiths, whitesmiths, founders, mechanical engineers, &c. ...		1,682
Tailors, shoemakers, dressmakers, outfitters, hatters, &c. ...		1,439
Shop and storekeepers, warehousemen, dealers, hawkers, &c. ...		1,200
Other artisans and mechanics—printers, bookbinders, coopers, &c.		1,162
Masons, bricklayers, slaters, hodmen, stucco-men, &c.		1,137
Carriers, draymen, bullock-drivers on roads, lightermen, &c. ...		1,108
Engaged in sea navigation—sailors, ship stewards, &c.		927
Horticultural—market gardeners, gardeners (master), &c. ...		867
Vegetable food chiefly and drinks—bakers, confectioners, greengrocers, &c.		840
Animal food chiefly—butchers, poulterers, fishmongers, &c. ...		832
Domestic servants (general)—cooks, coachmen, grooms (private servants)		791
Quarrymen, brickmakers, road and railway labourers, &c. ...		726
Workmen in Government employment—messengers, office-keepers, chainmen in survey parties, telegraph constructors, &c.		664
Other occupations—proprietors of labour markets, billiard-table keepers, &c.		594
Owners and drivers of coaches, cabs, watermen, &c.		555
Officers of general government—judges, resident magistrates, government clerks, surveyors, &c.		524
Bankers, brokers, accountants, auctioneers, commission agents, &c.		499
Coach and cart makers, wheelwrights, implement makers, &c. ...		493
Inn and lodging-house keepers, inn servants, &c.		482
Teachers, schoolmasters, tutors, &c.		405
Pastoral—squatters, stockholders, graziers, sheepfarmers, &c. ...		393
Woodsplitters, fencers, bushmen (otherwise undefined), &c. ...		312
Cabinetmakers, furniture dealers, carvers and gilders, turners, &c.		299
Tanners, fellmongers, soapboilers, woolsorters, charcoal burners, &c.		249
Clergy, ministers, priests, missionaries and their subordinates, pew-openers, &c....		245
Other professions—authors, editors, reporters, photographers, musicians, &c.		237
Police, wardens, turnkeys, &c.		217
Annuitants, independent means, &c.		211
Merchants, importers, &c.		204
Porters and messengers (not assistants in shops or stores) ...		171
Contractors (branch undefined)		160
Carried forward		53,978

Occupation.	Number.	
Brought forward	53,978	
Vignerons, dressers, gardeners, &c....	154	
Woodcutters, water-carriers, woodmen, &c.	154	
Overseers (branch of labour undefined)	148	
Physicians, surgeons, oculists, dentists, &c.	123	
Architects, civil engineers, surveyors (land), draughtsmen, &c.	123	
Dispensing chemists, druggists, &c.	96	
Lawyers, barristers, attorneys, conveyancers, &c....	90	
Persons deriving income from houses—householders, house proprietors, &c.	87	
Law clerks, law stationers, bailiffs, &c.	80	
Officers of corporations, district councils, &c.	77	
Gentlemen (not otherwise defined)	70	
Cattle-dealers and saleyard keepers, farriers, poundkeepers, &c.	33	
Church officers, vergers, sextons, &c.	10	
	———	55,223
Residue of the Male Population.		
Children, relatives, visitors, &c. (not otherwise defined)	23,526	
Scholars, whether in public or private schools, or at home ...	14,736	
Unemployed, "No occupation at present"...	816	
Occupation not stated	487	
Patients in hospitals, asylums, depots, &c.	419	
Prisoners	201	
	———	40,185
Total of the male population		95,408

FEMALES.

Occupation.	Number.
Domestic servants (general), cooks, &c.	6,443
Dressmakers, milliners, tailoresses, &c.	1,552
Teachers, schoolmistresses, governesses, music teachers, &c. ...	803
Farm labourers and servants, &c.	330
Farmers	244
Assistants in shops, &c.	170
Shop and store keepers, dealers, hawkers, &c.	161
Other occupations	141
Annuitants, independent means, &c.	117
Inn and lodging-house keepers, inn servants, &c.	95
Persons deriving income from houses—house proprietors, &c. ...	38
Vegetable food chiefly and drinks—bakers, confectioners, greengrocers, &c.	32
Animal food chiefly—butchers, poulterers, fishmongers, &c. ...	28
Ladies (not otherwise described)	20
Horticultural—market gardeners, &c.	18
Shepherds' wives assisting as hutkeepers, &c.	11
Vignerons, dressers, &c.	9
In Government employment — office keepers, nurses, &c. ...	8
Other professions — authors, musicians, &c.	7
Merchants, importers, &c.	6
Pastoral — squatters, stockholders, graziers, sheepfarmers, &c. ...	6
Registry office keepers, &c.	4
In Government employment	3
Employed by corporation — office keepers, &c.	2
Other artisans and mechanics — bookbinders, &c.	2
Chemist and druggist (proprietor)	1
Mason (ditto)	1
Blacksmith (ditto)	1
Carried forward	10,253

Occupation.	Number.	
Brought forward	10,253	
Builder (proprietor)	1	
Cabinetmaker (ditto)	1	
Tanner, &c. (ditto)	1	
Wood and water carter	1	
Porter and messenger	1	
	——	10,258

Residue of the Female Population.

Children, relatives, visitors, &c. (not otherwise defined) ...	34,826	
Wives, widows, &c.	30,555	
Scholars, whether in public or private schools, or at home ...	14,123	
Patients in hospitals, asylums, depots, &c.	284	
Occupations not stated	84	
Unemployed, "No occupation at present," &c.	48	
Prisoners	40	
	——	79,960
Total of the female population		90,218

Religions of the People.—The various religious denominations were ascertained at the census taken in 1871, and the numbers in connection with each were found to be as follows:—

	Number.	Per cent. of the Population.
Church of England	50,849	27·39
Roman Catholic	28,668	15·44
Wesleyan Methodist	27,075	14·59
Lutheran, German	15,412	8·30
Presbyterian	13,371	7·20
Baptist	8,731	4·70
Primitive Methodist	8,207	4·42
Congregational or Independent	7,969	4·29
Bible Christian	7,758	4·18
Christian Brethren	1,188	·64
Methodist New Connection	363	·20
Unitarian	662	·36
Moravian	210	·11
Society of Friends	92	·05
New Jerusalem Church	137	·07
Jews	435	·23
Protestants (not otherwise defined) ...	4,753	2·55
Other Religions	508	·27
Object	5,436	2·92
Not stated	3,808	2·04

Excluding those cases in which objection was taken to affording the information, or the information was not given, it would appear that about eighty-five per cent. of the whole population are members of Protestant Churches, and the remaining fifteen per cent. are Roman Catholics. The Church of England is represented by twenty-seven per cent., the Wesleyan Methodists by fifteen per cent., the German Lutherans by eight per cent., Presbyterians by seven per cent., and

the Congregationalists, Bible Christians, Primitive Methodists, and Baptists each by about five per cent. of the total population.

EDUCATION.—The returns under this head only show the number of persons able to read and write, those able te read only, and those unable to read. Omitting children under five years of age, the proportion of each class is as follows:—Seventy-five per cent. of the population can read and write, fourteen per cent. can only read, and ten per cent. can neither read nor write.

Of the rising youth, say from fifteen to twenty-one years of age, ninety-one per cent. can read and write, six per cent. can read only, and only three in every hundred are totally uneducated.

That parents are alive to the necessity of giving their children a degree of education which they, from the circumstances of their early life, were precluded from receiving, is proved from the fact that whilst among the adult population sixty-one in every 1000 are returned as unable to read, the number of youths of both sexes between the ages of fifteen and twenty-one who cannot read is only thirty in every 1000; the numbers specified ten years before being respectively eighty-three in every 1000 adults as against fifty-one in every 1000 youths unable to read.

The following table affords a comparison of the degree of education in the different Australian colonies:—

NAME OF COLONY.	Proportion of every 1000 Children between five and fifteen years of age who could		
	Read and Write.	Read only.	Not Read.
South Australia	576	234	190
Victoria	640	207	154
New South Wales	536	209	255
Queensland	512	246	242

BIRTHS, MARRIAGES, AND DEATHS.

The Province is divided into twenty-eight registration districts for the purpose of recording births and deaths and for the registration of marriages. The number of births registered during 1875, was 7408, namely, males 3774, and

females 3634. The following tables show the number of births at quinquennial periods:—

BIRTHS.			
Years.	Males.	Females.	Total.
1856	2336	2152	4488
1861	2868	2683	5551
1866	3470	3312	6782
1871	3695	3387	7082
1875	3774	3634	7408

The average birth-rate is thirty-seven per thousand of the population, which compares favourably with the birth-rate in England and Wales, viz. thirty-three per thousand. The proportion of births is 104 males to 100 females, or the same proportion as is recorded at home. The number of marriages registered in 1875 was 1688.

There is an average of eight marriages per thousand of the population, being almost identical with the rate in the Mother Country. The annexed statement shows the number of marriages solemnized by each denomination in 1866, 1871, and 1875:—

MARRIAGES.

Solemnized	1866.	1871.	1875.
By the Church of England	325	284	391
„ Roman Catholics...	183	177	199
„ Lutherans	101	82	99
„ Congregational Independents	122	95	110
„ Wesleyans	164	178	306
„ Free Church of Scotland	1	3	9
„ Presbyterian	108	88	92
„ Christians	14	21	33
„ Baptists	47	58	82
„ Bible Christians	81	93	109
„ Primitive Methodists	94	107	162
„ Methodist New Connection	6	7	8
„ Moravians	1	2	3
„ Unitarians	6	6	4
„ Jews	3	...	2
„ District Registrars	43	76	76
„ Christian Brethren	...	2	1
„ Mission to Aborigines	...	3	...
„ New Jerusalem Church	...	4	2
	1299	1250	1688

The rate of mortality throughout the Province was much higher in 1875 than usual, owing to the prevalence of zymotic diseases—measles and scarlatina—which caused (local diseases supervening) an advance of the death-rate, especially amongst infants and children. The total deaths registered were 2118 males and 1918 females. The following is a table showing the mortality in the years mentioned :—

DEATHS.			
Years.	Males.	Females.	Total.
1856	658	489	1147
1861	1095	867	1962
1866	1537	1216	2753
1871	1352	1026	2378
1875	2118	1918	4036

Nearly one-half of the mortality is of infants under two years—a rate not so high as rules in England. A larger number of male than of female children die at that period of infancy.

The following table shows the average death-rate for ten years under each class of disease in England and in South Australia :—

DEATH-RATE PER 1000 OF POPULATION.		
CLASS.	South Australia.	England.
I. Zymotic	4·28	5·19
II. Constitutional	1·68	4·19
III. Local	5·26	8·68
IV. Developmental... ...	2·88	3·60
V. Violent	0·7	0·78
VI. Unspecified	0·34	—
All causes	15·14	22·47

The average death-rate in South Australia is fifteen per thousand, as compared with twenty-two per thousand in England.

IMMIGRATION AND EMIGRATION.

Last year, 6566 persons arrived in South Australia, and 4019 left it, yielding an increase of the population from this source of 2547 persons. During that and the preceding twelve months assisted immigration was resumed by Government after a lapse of several years. The sum voted by Parliament for the introduction of immigrants during the coming year (1876) is £100,000, and the balance of the amount voted for expenditure in 1875, equal to £18,551, is also available for the like purpose. These sums provide a fund sufficient for the introduction of about six thousand adults, or between four and five hundred souls monthly.

When it is considered that during the past five years nearly two and a half millions of acres of land have been taken up for agricultural settlement, a steady and moderate increase of man power, suitable to the requirements of the country, becomes an absolute necessity. Such additional labour will be readily absorbed into the general population without producing any disturbance of social interests. This large augmentation of the area occupied by the farming classes has taken place during a period in which the influx of population from abroad only amounted to 4555 souls.

The following statement shows the total immigration and emigration during each of the past five years, and also the number of immigrants introduced at the public expense :—

Year.	Immigration.			Emigration.			Immigrants at Public Expense.		
	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.
1871	1,681	851	2,532	2,037	1,145	3,182	—	—	—
1872	1,604	797	2,401	2,173	1,232	3,405	—	—	—
1873	3,064	1,484	4,548	2,126	1,046	3,172	104	122	226
1874	3,555	2,002	5,557	2,226	1,045	3,271	1,192	960	2,152
1875	4,311	2,255	6,566	2,718	1,301	4,019	1,156	911	2,067
Total...	14,215	7,389	21,604	11,280	5,769	17,049	2,452	1,993	4,445

Government immigration was resumed in 1873; since the commencement of which year the balance of immigration over emigration has amounted to 6209 souls, or 1764 more than

the number introduced at the expense of the State. It will also be noticed that the proportion of immigrants at their own cost largely increased during the past year.

EDUCATION.

The administration of the public votes for educational purposes, and the control and management of State assisted schools throughout the Province, have been vested, since 1851, in a Central Board of Education.

The number of schools licensed by the Board in 1874 was three hundred and twenty, of which fourteen were within the City of Adelaide, twenty-seven in other corporate towns, and two hundred and seventy-nine in the country districts. Presiding over these schools, were two hundred and seventeen licensed schoolmasters and ninety-eight licensed schoolmistresses. The number of scholars attending was 17,426; of whom 9625 were boys, and 7801 girls. The average attendance at all schools was 13,774 for one month; the average number on the roll at each school was fifty-four, and the average attendance forty-three, whilst the percentage of attendance to the number on the rolls, during one month, was 79.

The following table shows the operations of the Board last year as compared with 1870.

	1870.	1874.
Number of licensed schools	300	320
Number of licensed schoolmasters	222	217
Number of licensed schoolmistresses	72	98
Scholars at licensed schools, including destitute children and orphans ... ... (Highest number on the monthly roll.)	Boys... 8,491 Girls... 6,617 15,108	Boys... 9,625 Girls... 7,801 17,426
Average attendance	11,969	13,773

The expenditure of the Board in 1874 was £29,689, being an advance of £9266 upon that of 1870. The total sum expended in aid of erecting district school-houses has been £22,207. The average amount of school fees paid for each scholar by parents, &c. was 19*s.* 7¼*d.* The average expense to the State of each licensed school was £83 10*s.* 3*d.*

In addition to schools receiving aid from the Government, there have always existed a large number of private schools with an average attendance of about 7000 scholars.

During the past year, a new Education Act was passed, providing that the future management of public education shall be committed to a Council, with a paid president and staff of officers directly responsible to the Minister of Education—a member of the Cabinet. Mr. Harcus thus describes the nature of the improvements contemplated by the new measure:—"Schools will be established wherever there is a certain number of children of a school age who will pay a moderate fee to the teachers" [viz. 4*d*. per child per week]. "In addition to the fees, the teachers will be paid by the Government, through the Council, salaries varying from £100 to £300 per annum. Schoolhouses will be provided, and the necessary education material. Grants of public lands will be set apart every year, and placed under the control of the Council, the rents from which will be devoted to school purposes. Four and a half hours each day will be devoted to secular instruction, previous to which the Bible may be read—without note or explanation: practically, the instruction will be secular. All children of school age will be required to be under instruction until a certain standard of attainment (to be fixed by the Council) is reached: so far, the system will be compulsory. Provision is made for the gratuitous instruction of children whose parents can show that they are not able to pay for it; but fees may be enforced in all cases where inability to pay them has not been proved. It will thus be seen that the three great principles of public education which are now so much in vogue are adopted in the Bill, with certain modifications—the education is secular, but not to the exclusion of the Bible; free, to those who cannot afford to pay a small fee; and compulsory, wherever practicable. Provision is also made for the establishment of model and training schools, of Boards of Advice, and for the systematic examination of teachers and their classification according to their attainments and proficiency, and for scholarships."

With a view of showing that Parliament is desirous of

fostering and encouraging the growth of a comprehensive system of public instruction, it may be stated that the following grants of money and land have lately been made:— Towards the expenses of the Education Department, payment of teachers, &c., a yearly sum of £60,000; and a like amount for the erection of public school-buildings. One hundred and twenty thousand acres of the public estate were also granted to the Council, and provision made for setting apart 20,000 acres in future years. To the University of Adelaide, lately established, an annual grant of five per cent. on all sums contributed to the University from private sources (at present amounting to over £40,000), and also an endowment of 50,000 acres of land. For the maintenance of Institutes, and for the erection of buildings connected therewith, the sum of £16,000.

The South Australian Institute, established in 1856, contains, under one roof, a Public Library and Museum, a Circulating Library, and a Public Reading and News Room. It has also incorporated with it societies for the promotion and study of Philosophy and the Fine Arts. The Institute is managed by a Board of Governors, and is subsidized by the State. The seventy-five country institutes which the parent institute has affiliated are scattered over the length and breadth of the Province. They are governed by Committees elected by the members of each institute. About twenty possess buildings half the cost of which has, in each case, been defrayed from the public revenue.

The number of volumes in the Library of the South Australian Institute is 18,837; the number of subscribers is 715; and the number of volumes in circulation during the year, 54,648. In the country institutes, the number of volumes is 42,393; the number of members, 2904; the aggregate income (exclusive of the Government grant), £3360; and the number of volumes circulated during the year has been 76,487.

PUBLIC WORSHIP.

The voluntary principle, or freedom of religion from State assistance and consequent control, was established in South Australia from the date of its foundation. The beneficial

results of its operation under the circumstances of this community may be estimated by the fact that two-thirds of the population are provided with suitable accommodation for the observance of public worship. The number of churches, chapels, rooms, and other buildings used for public worship at the end of 1874 was 876, providing 132,000 sittings, distributed in the proportion shown in the following table:—

Denomination.	Number of Churches or Chapels.	Number of Sittings in such Churches or Chapels.	Number of Rooms and other Buildings, used for Public Worship.	Number of Sittings in such Rooms, &c.
	1874.	1874.	1874.	1874.
Church of England	73	19,452	38	1,273
Church of Scotland	2	150	—	—
Roman Catholics	42	11,500	5	480
Congregationalists or Independents ...	36	8,400	10	400
Baptists	27	5,725	11	680
Wesleyan Methodists	160	30,296	104	2,000
German Lutherans	31	5,324	8	400
Bible Christians	86	14,000	20	750
Primitive Methodists	106	14,000	41	1,000
Methodist New Connection	2	625	2	90
Free Presbyterian	4	600	4	300
Presbyterian Church of South Australia...	15	3,960	13	1,190
Unitarians	1	300	1	100
Moravians	1	200	—	—
Friends, Society of	2	200	—	—
New Jerusalem Church	1	130	—	—
Christians (Brethren, Disciples, &c.) ...	20	5,000	9	2,450
Hebrews	1	200	—	—
Totals	610	120,062	266	11,113

Ten years ago there were 535 churches, containing 86,000 sittings. The number of Sunday schools in 1874 was 525, attended by 35,671 children, instructed by 4650 teachers, of whom 2200 were male and 2450 female. The average attendance of scholars has been uninterruptedly increasing year by year since 1865, when the number reached 23,739.



PARK SIDE LUNATIC ASYLUM.

CHARITABLE INSTITUTIONS.

Ample provision is made by the state for the relief and support of that helpless section of the community which may be divided into aged and sick, persons mentally infirm, and orphan children.

The Adelaide Hospital is a Government institution, under the management of a Board consisting of professional and non-professional members, who with an efficient staff of officers administer the affairs of the institution. During the year 1874, there were 1806 inmates of the Hospital, of whom 98 died, 1579 were discharged, cured, or relieved, and 129 remained on the last day of the year. The daily average number of patients was 134. There are five hospitals in the country districts, and in addition thereto provision is made for medical attendance on the indigent sick throughout the settled portions of the Colony.

Two hospitals for the insane are also provided by the State, and are conducted on the same principles as similar asylums in the Mother Country, and with great efficiency. For every 100,000 of the population, South Australia has 195 insane persons; England has 226. The total number of cases treated was 464; the daily average number in the asylums was 352; the number of admissions was 106; the number of patients discharged, cured, or relieved, was 81; and the number of deaths was 32. Patients able to maintain themselves are also admitted for treatment upon paying reasonable fees.

The asylum for the relief of infirm and destitute persons not requiring active medical treatment affords assistance to the necessitous. The rule is rigidly followed of excluding from in-door relief any able-bodied person, and out-door relief is only given to males in consequence of sickness—and then only on medical certificate; it being understood that no man capable of working and able to earn his own livelihood should be assisted from the funds of the institution. The cases of widows and orphans, or females deprived of their natural protectors, are exceptionally regarded; and applicants for relief of this class are treated according to circumstances, and receive all necessary assistance. The average number in the asylum

of male adults is 175, chiefly infirm and decrepit, and 83 female adults. Seventy-two, principally young children, were maintained in the Industrial Schools connected with this institution. On arriving at a suitable age, the children are placed with or adopted by private families, under what is known as the boarding-out system, under the careful supervision of the department, assisted by a committee of ladies who voluntarily devote the necessary time to overlooking the children's welfare. Some five hundred orphans and neglected children have by these means found comfortable homes, and the system generally is considered to have worked with great success.

The protection of the aborigines and the duty of supplying them with medical comforts in sickness, &c., is performed by a public officer. The welfare of these people has also been attended to by several long-established institutions, mainly supported by voluntary contributions.

Among other benevolent institutions of a private character are the Strangers' Friend's Society, Hebrew Philanthropic Society, Female Refuge, Homœopathic Dispensary; institutions for the relief of the blind, deaf, and dumb; cottage homes for the aged and infirm poor and widows; Convalescent Hospital; Orphan Home, for the reception and training of orphan girls; Prince Alfred's Sailors' Home; and Servants' Home.

Although not strictly coming under the head of charitable institutions, it is desirable to mention that twenty-eight Masonic lodges, English, Irish, and Scotch constitutions, are distributed throughout the Colony.

Friendly Societies have also been for many years in active operation under local legislation, and are firmly established with a large accumulated fund at their disposal. The chief orders of these societies are, I.O.O.F., M.U.; the Ancient Order of Foresters; the U. O. Oddfellows; the Ancient Order of Druids; two Independent Orders of Rechabites, and the Order of Good Templars. The total number of members of Friendly Societies is 15,092; their total income, £42,464; their total expenditure, £35,434; and their total assets amount to £87,250.

ADMINISTRATION OF JUSTICE.

The legal tribunals of the Province consist of a Supreme Court, presided over by the Chief Justice, and two Puisne Judges; the Court of Vice-Admiralty, of which the Chief Justice is Judge; the Court of Insolvency, presided over by a Commissioner; Local Courts of Civil Jurisdiction, presided over by Stipendiary Magistrates; and Police Magistrates' Courts.

Subjoined is a statement of the proceedings in the Supreme Court in its civil jurisdiction, during the years 1865, 1869, and 1874:—

	1865.	1869.	1874.
Common Law—			
No. of Writs issued	710	610	479
No. of Records entered for trial	51	61	35
Total amount for which judgments signed	£12,530	£23,444	£19,390
Equity—			
No. of Bills filed	18	33	30
No. of Claims	9	—	—
No. of Petitions	25	23	27
Testamentary—			
No. of Probates	88	102	167
Amount sworn to	£277,070	£155 267	£394,180
No. of Letters of Administration ...	56	55	89
Amount sworn to	£16,670	£38,860	£57,680
Matrimonial Causes Jurisdiction—			
No. of Cases	14	7	18
Appellate Jurisdiction—			
No. of Special Cases from Insolvency Court	1	1	2
No. of Appeals from Local Courts ...	33	16	16
No. of Writs of Certiorari removing Judgment from Local Court ...	44	56	48
No. of Writs of Habeas Corpus, Mandamus, &c....	6	6	5
No. of Special Cases	4	9	—
No. of Writs of Summons	366	216	159

The number of writs passing through the Sheriff's office during the same years was as follows:—

	1865.	1869.	1874.
Capias ad satis.	17	31	25
Fieri facias	36	35	18
Other writs	15	16	11
Totals	68	82	54

The following table shows the number of insolvencies, assignments, &c., and the amount of liabilities and assets

specified in the insolvents' schedules, also taken for the same interval of five years:—

	1865.	1869.	1874.
No. of Adjudications issued—			
On Petition of Creditors...	12	13	23
On Petition of Imprisoned Debtors ...	39	68	67
Of which, in *forma pauperis*... ...	38	67	66
On Petition of Debtors at large ...	58	63	*nil*
Totals	109	144	90
Amount of Liabilities, as shown in the Insolvents' Schedules	£117,482	£75,868	£54,637
Amount of Assets, as shown in the Insolvents' Schedules	£69,741	£31,605	£19,434
Amount of Deficiency, as shown in the Insolvents' Schedules	£47,741	£44,263	£35,202

Local Courts of civil jurisdiction are established in all the principal towns throughout the Province, and number forty-five. They are arranged in circuits, and are presided over by Stipendiary Magistrates. These courts adjudicate in all personal actions involving amounts up to £100, and in actions of ejectment where the land is under the Real Property Act, and does not exceed £100 in value. A Special and two other Magistrates, or a Special Magistrate and a jury of four, constitute a court of full jurisdiction, and one Special Magistrate a court of limited jurisdiction. The latter does not adjudicate on amounts above £20.

The following return shows the number and extent of proceedings in the Local Courts. The figures given as amount of judgments obtained after hearing do not, of course, represent the whole amount recovered through the agency of these Courts, as a considerable proportion of the claims are settled out of Court after issue of the summons, and do not come on for hearing:—

Claims made in the Local Courts of	Number of Summonses issued.			Amount of Claims sued for.			Judgments obtained after Hearing.		
	1865.	1869.	1874.	1865.	1869.	1874.	1865.	1869.	1874.
Limited Jurisdiction—				£	£	£			
Up to £5	3,896	5,264	6,674	9,056	11,653	14,432	2,699	3,430	3,345
Above £5 and up to £10	1,434	1,879	1,926	10,251	13,184	14,363	3,345	4,615	3,486
,, £10 ,, £20	1,014	1,348	1,318	14,478	19,376	17,985	5,120	6,703	5,460
Full Jurisdiction—									
Above £20 and up to £30	393	610	507	9,388	14,813	12,635	3,419	5,240	4,187
,, £30 ,, £50	327	468	369	12,720	18,281	14,265	3,930	6,153	4,809
,, £50 ,, £100	248	373	280	18,374	29,490	20,508	5,416	8,789	4,856
,, £100, "by consent"	2	1	—	240	134	—	—	205	—
	7,314	9,943	11,074	74,528	104,934	94,191	23,931	35,138	26,646

The legal profession numbers eighty-five members; the two branches of barrister and attorney are united. A valuable law library, containing about two thousand volumes, is attached to the Supreme Court.

The criminal records of the Courts are calculated to convey a favourable impression of the law-abiding impulses of the South Australian community, the proportion of serious crimes being exceedingly small. In fact, the "criminal class" may be said to be unknown in South Australia. Following is a statement of the number of convictions in the Supreme Court during the years named:—

	1865.	1869.	1874.
Number of Felonies—			
Against the person	12	17	7
Against property	98	87	53
Total number of Misdemeanours ...	24	17	14
Total	134	121	74

The annual number of convictions in the Supreme Court has averaged during the last three years seventy-two, or only one in three thousand of the population. During the past ten years capital punishment has been inflicted in four instances—amongst them one aborigine suffered the extreme penalty of the law.

The following table shows the number of cases of felony and misdemeanour preliminarily investigated in the Police Courts, and how they were disposed of—whether by committal to the Supreme Court, summary convictions under the Minor Offences Act, conviction of juvenile offenders, or by dismissal of cases:—

How disposed of.	1865.	1869.	1874.
Committed to Supreme Court	197	237	150
Committed to Local Court Full Jurisdiction	79	61	—
Convicted—Minor Offences Act	—	—	150
Convicted—Juvenile Offenders	—	—	22
Cases dismissed	155	207	132
Total	431	505	454

About one-half of the commitments for trial in the Supreme Court resulted in conviction.

In addition to the preliminary investigations above referred to, the Stipendiary Magistrates have summary jurisdiction in cases of breaches of the provisions of Acts of Parliament where the penalty is limited to fine, or to fine and imprisonment. This class of offences is principally composed of cases of drunkenness in the streets, offences under the Police Act, common assaults, breaches of the Waste Lands and Impounding Acts, the Merchant Shipping and Marine Board Acts, and non-compliance with Municipal bylaws.

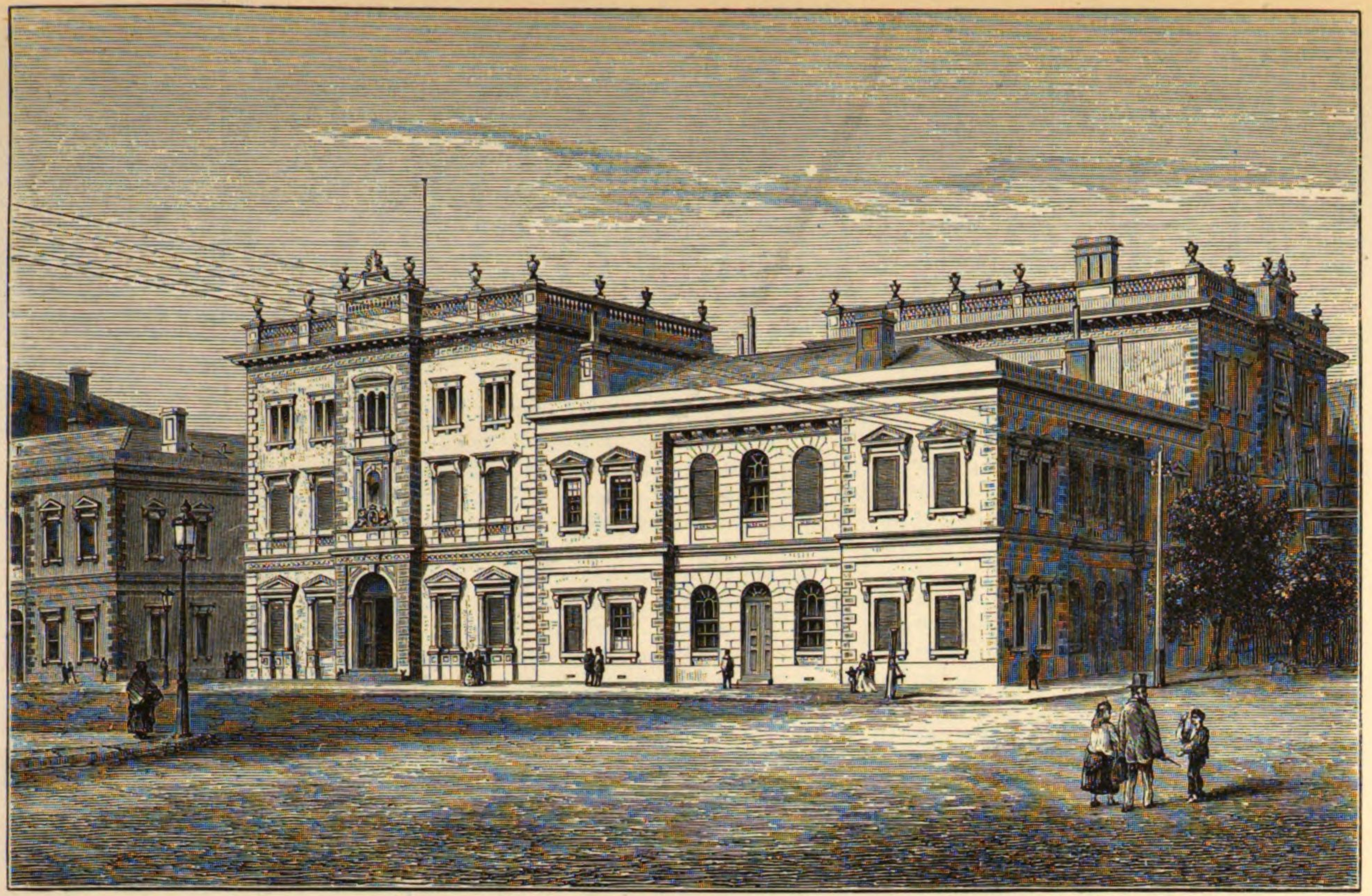
The following table indicates the number of cases heard and determined in the years 1865, 1869, and 1874:—

	1865.	1869.	1874.
Informations under Acts of Councils, &c.—			
Dismissals	732	749	688
Convictions	2,632	3,129	3,445
Drunkenness			
Dismissals	105	86	55
Convictions	1,530	1,540	1,615
Total	4,999	5,504	5,803

Considering the increase of population during the ten years, the relative number of convictions, especially in cases of drunkenness, has materially declined.

LAND TRANSFER, LIENS, MORTGAGES, ETC.

The Statute known as the Real Property Act of South Australia affords a facile and convenient process by which the transfer of landed property may be accomplished in as easy and cheap a manner as any ordinary commercial transaction. Where almost every man is a landowner, or is interested in land—either as vendor or vendee, lessor or lessee, mortgagor or mortgagee—dealings in real estate become a matter of almost everyday occurrence. It may be said to be quite exceptional for an individual in South Australia not to be, more or less, personally interested in the establishment of a simple and inexpensive method of dealing with this description of property. There can be no question that the operation of



GOVERNMENT OFFICES, ADELAIDE.

Years.	Amount Lent on Mortgage.	Transactions.																					Value of Land brought under operation of Act, including Land Grants.
		Applications.	Transfers.	Mortgages.	Leases.	Transfers of Mortgages.	Discharges of Mortgages.	Powers of Attorney.	Registration Abstracts.	Caveats, &c.	Nominations of Trustees.	Encumbrances.	Transfers of Leases.	Surrenders of Leases.	Schedules of Trusts.	Licences.	Transmissions, &c.	Withdrawal Caveats.	Assignments, &c., deposited.	Recoveries by Lessors.	Orders of Court.	Writs.	Foreclosures.	Totals.	
	£																						£
1858	5,670	184	54	24	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	263	132,500
1859	54,719	829	190	265	50	3	9	1	2	4	2	—	—	—	—	—	—	—	—	—	—	—	1,355	538,340
1860	178,370	987	348	530	71	9	48	1	—	18	10	1	4	1	1	2	—	—	—	—	—	—	2,031	508,216
1861	233,424	747	505	558	155	11	155	1	—	14	15	5	4	4	1	8	—	—	—	—	—	—	2,183	451,475
1862	213,829	901	745	735	174	26	239	4	—	17	1	1	9	7	7	7	6	10	2	—	—	—	2,891	477,502
1863	260,423	1,060	898	901	227	23	325	9	—	34	—	5	13	24	16	16	22	22	—	1	1	1	3,598	505,806
1864	333,401	1,145	1,292	959	227	40	493	33	—	36	—	4	17	31	29	16	58	19	—	2	1	1	4,406	623,167
1865	492,158	1,142	1,767	1,200	290	49	605	22	—	34	—	2	34	37	15	16	53	20	—	—	1	—	—	5,287	939,900
1866	677,958	1,034	1,934	1,697	334	66	708	24	—	71	—	5	47	32	19	21	44	22	—	—	1	1	—	6,060	779,648
1867	705,543	817	1,703	1,700	320	188	848	14	—	76	—	7	39	87	14	34	68	36	—	—	4	7	—	5,962	478,880
1868	640,114	779	1,771	1,837	296	105	975	21	—	47	—	9	28	56	22	31	99	20	—	—	6	13	2	6,117	518,646
1869	766,344	812	2,075	1,835	333	106	1,084	15	—	56	—	15	36	63	17	36	106	27	—	—	12	11	—	6,589	540,410
1870	667,470	662	1,887	1,725	247	141	929	15	—	67	—	13	41	72	22	29	185	38	—	—	10	12	6	6,101	427,310
1871	697,228	704	2,044	1,612	339	133	1,198	16	—	70	—	9	49	79	21	42	198	37	—	1	14	9	7	6,582	468,686
1872	642,048	611	2,521	1,648	335	201	1,410	23	—	42	—	28	56	78	22	43	214	36	—	—	12	12	12	7,334	475,046
1873	699,981	738	3,014	1,667	357	114	1,619	24	—	71	—	6	61	77	21	40	227	16	—	—	7	5	5	8,069	788,576
1874	1,068,693	764	3,384	1,977	395	101	1,561	22	—	81	—	9	55	90	15	40	172	28	—	—	2	3	2	8,701	606,050
1875	997,775	830	4,270	2,352	413	152	1,658	31	—	25	—	16	83	103	20	46	302	27	—	—	5	3	—	10,336	632,102

the measure has been highly advantageous to the community; and as considerable interest is attached to the working of so important a reform, a detailed statement is given of the transactions of the office in each year since its establishment in 1858. (*See* page 343.) The total value of the lands brought under the operation of this law amounts to nearly ten millions sterling.

An Assurance Fund in connection with the Act was established with a view of meeting claims for compensation on the part of any person who, through error or fraud, might suffer from the carrying out of the principles of absolute indefeasibility of title. This fund is derived from a contribution of one halfpenny in the pound levied on all property brought under the operation of the Act; it now amounts to over £30,000, and is invested in Government securities. The claims on the fund have reached £308 up to the present time.

The following statement shows the number and amount of liens, mortgages, and other securities for advances of money registered during the years mentioned :—

Years.	Mortgages on Land.		Mortgages on Stock.		Liens on Wool.		Bills of Sale, &c.	
	No.	£	No.	£	No.	£	No.	£
1866 ...	2,252	1,033,422	91	266,031	22	51,072	158	130,153
1871 ...	1,922	920,891	151	116,875	36	82,513	259	67,498
1875 ...	2,627	1,289,635	158	254,508	41	55.043	268	168,194

Of the total amount of mortgages on land registered last year, £997,775—or three-fourths of the whole—were advances upon land under the operation of the Real Property Act.

REVENUE AND EXPENDITURE.

The finances of the Colony of South Australia have never been in a more prosperous condition than at present. The returns of receipts from all sources of revenue indicate the steady progress and growth of the community, and there is a tone of elasticity which promises well for the future.

The General Revenue for the year ended 31st December

1875 amounted to £1,143,312 5*s.* 10*d.*, to which must be added the balance to credit at the commencement of the year, £92,677 2*s.* 2*d.*, making a total income of £1,235,989 8*s.*

The Total Expenditure by the Government during the same period was £1,176,412 18*s.* 10*d.*, leaving a balance at the end of the twelve months of £59,576 9*s.* 2*d.*

The Public Loan Account is kept distinct from that of the General Revenue.

The receipts of the year amounted to five pounds twelve shillings per head of the population. The amount of revenue contributed through the Customs—the only source of general taxation—was thirty-three shillings per head, an amount lower than the rate of taxation in the Mother Country, or in any of the other Australian Colonies.

The following table gives the amount of revenue derived under the several heads of receipt :—

HEADS OF RECEIPT.

	£
Customs	339,103
Marine	9,237
Rents, &c., crown lands	85,744
Rents—ordinary	1,120
Licences—business	13,920
Postages and telegraphs	78,818
Fines, fees, and forfeitures	27,582
Sales of Government property	437
Reimbursements in aid	11,991
Miscellaneous	4,561
Interest and exchange	2,762
Railways and tramways	183,095
Waterworks	30,895
Land sales { Proceeds of	177,530
Land sales { Interest on credit sales	112,038
Immigration	4,473
	£1,143,312

In young communities the general Government has necessarily imposed upon it functions and duties from which, in more advanced conditions of society, the State is exempt. The construction of railways, waterworks, telegraphs, roads, public buildings, &c. must, if entered into at all, be undertaken at the public cost. Moreover, such works must, in common prudence, be constructed on a scale in advance of the actual

requirements of the moment. In South Australia such expenditure forms a large proportion of the whole, will benefit future generations equally with the present, and must not be regarded as ordinary current cost of Government.

The subjoined table shows the expenditure, specified under the respective heads of service for which it was incurred :—

HEADS OF EXPENDITURE.

	£
Civil list	18,900
The legislature	10,803
Civil establishments	36,035
Judicial and legal departments	31,059
Police	50,245
Gaols and prisons	12,337
Education	42,636
Charitable institutions	54,042
Military defences	882
Postal and telegraph services	132,744
Customs	11,577
Harbours and lights	16,498
Public works	247,940
Railways and tramways	177,456
Waterworks	18,117
Survey and crown lands	37,466
Retiring allowances, &c.	9,919
Interest and exchange	4,838
Miscellaneous	58,894
Immigration	27,139
Interest on loans for public works	142,476
Redemption of ditto	34,400
	£1,176,412

The payments may be summarised as follows:—The ordinary expenses of Government (including judicial and legal departments, police, gaols, prisons, &c.) amount to £262,000, or twenty-five shillings per head of the population, being eight shillings less than the taxation; £43,000 is devoted to education; £54,000 to charitable institutions; and £328,000 is required for the service of reproductive works. Among these latter, railways require £177,000, the receipts from that source being £183,000. The waterworks take £18,000, and the receipts therefrom are £31,000. The post and telegraph services absorb £132,000, and the revenue contributed by them is £78,000. The interest on the bonded debt amounts to £142,000, averaging fourteen shillings per head of the popu-

lation; but an amount very much larger than this is annually saved by the reduced cost of carriage and other facilities afforded to the public by the works constructed out of the loans upon which this interest accrues. The cost of the survey and management of Crown lands was last year £37,000; and £27,000 was devoted to the introduction of immigrants.

The expenditure on public works and in reduction of loans amounted to £282,000, being 105,000 more than the sum received during the year from the proceeds of the sales of waste lands. The Crown lands being the capital of the Colony, it is important to note that not only were the receipts derived from their sale devoted intact to improving the public estate, but a sum equal to one-third more, derived from the general revenue, was also expended in the same direction.

LOANS FOR PUBLIC WORKS.

Legislative sanction has been accorded from time to time for the raising of moneys by way of loan for the prosecution of reproductive public works, such as railways, tramways, waterworks, telegraphs, harbour improvements, and other public purposes. The following return shows the amount of Public Debt outstanding on 31st December 1875 for each of the several Public Works, and the total rate of indebtedness per head of the population, and for each undertaking:—

	Public Debt.	
	Amount.	Rate per Head.
	£	£ s. d.
Railways	1,381,600	6 11 0
Tramways	131,500	0 12 0
Waterworks	511,600	2 8 6
Telegraphs	378,400	1 16 0
Harbours and lights	328,000	1 12 0
Roads	236,000	1 2 0
Public purposes	168,500	0 16 0
Northern Territory...	185,000	0 17 6
Total	£3,320,600	£15 15 0

If it be asked what the Colony has to show in the shape of permanent improvements, it may be answered that there are three hundred and forty miles of railway. The city, port, and

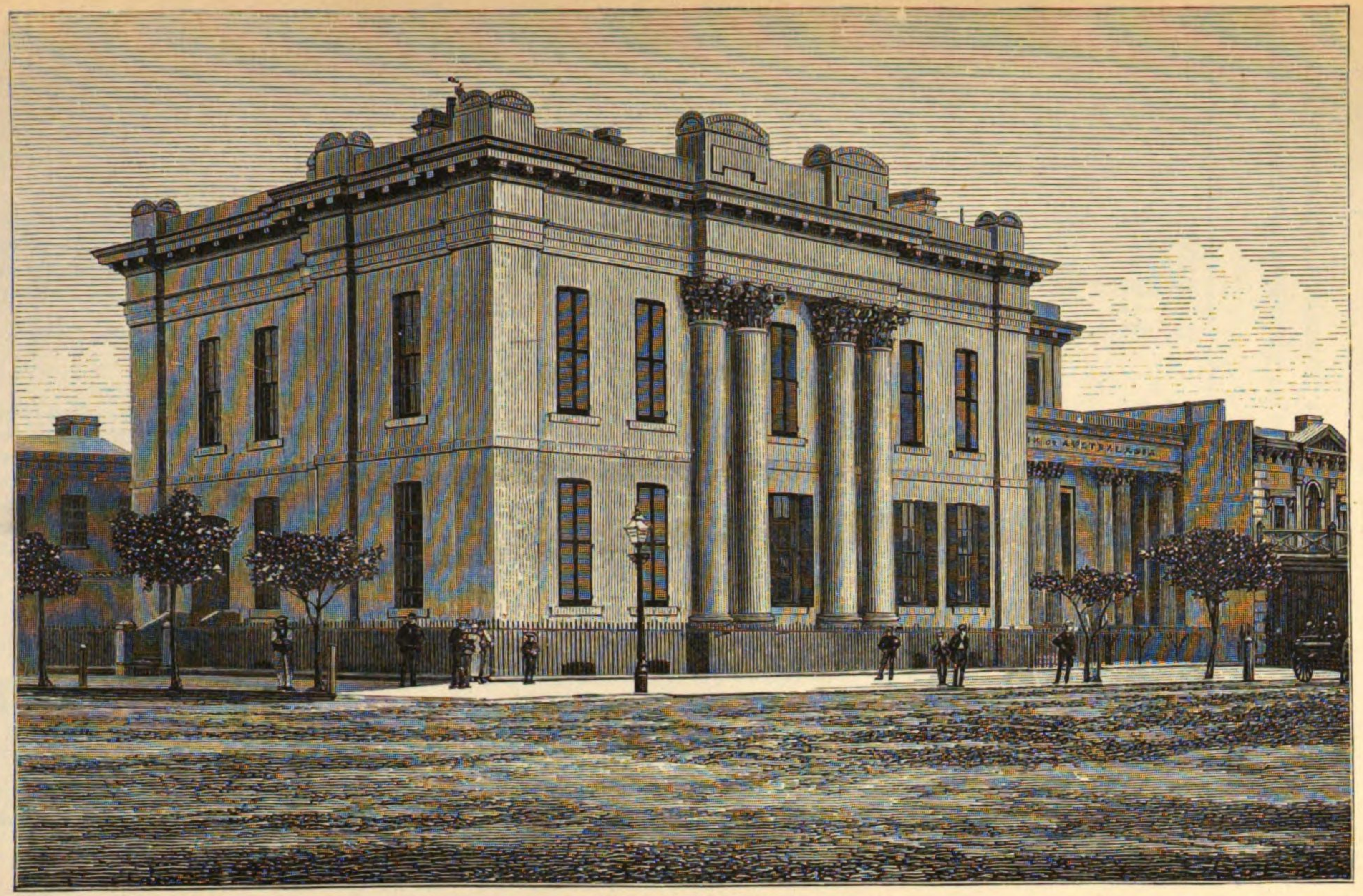
suburbs of Adelaide, with sixty thousand residents, have an abundant and constant water supply. Harbours have been deepened and improved, and navigation rendered easy by an almost perfect system of lighthouses. Eighteen hundred miles of macadamised roads are in effective order, and the Province is traversed from north to south and from east to west by telegraphs, over five thousand miles in length, bringing us into instantaneous communication with the whole world.

The earlier loans were issued bearing six per cent. interest, but those of late years bear four per cent. only. The present price of South Australian four per cents is 95½. Interest and redemption is payable in London on 1st January and 1st July in each year. The currency of the bonds is generally thirty years. Redemptions to the amount of £678,400 have been made since the first issue of bonds in 1854.

BANKING.

Six banking institutions carry on business within the Province, namely, the Bank of South Australia, Bank of Australasia, Union Bank of Australia, National Bank of Australasia, English, Scottish, and Australian Chartered Bank, and Bank of Adelaide, all of which have establishments in the principal seaports and inland townships, numbering altogether sixty-four branches and agencies. Quarterly general abstracts are published of the average amount of liabilities and assets of the several Banks, taken from their weekly statements, and they comprise in each case a return of the notes and bills in circulation, the balances due to other Banks, and deposits with and without interest. The total average liabilities of the six Banks amount to £3,278,121, and the total average assets to £5,157,868. The following table shows the total average assets and liabilities of all the Banks taken for the last quarter of each of the years mentioned :—

	1861.	1866.	1871.	1875.
	£	£	£	£
Liabilities ...	1,024,686	1,715,395	1,802,634	3,278,121
Assets... ...	1,869,068	3,620,062	3,524,412	5,157,868



Bank of Australasia.

The annexed statement shows the position of each Bank as set forth in the quarterly return of December 1875 :—

	Bank of South Australia.	Bank of Australasia.	Union Bank.	National Bank.	English, Scottish, and Australian Chartered Bank.	Bank of Adelaide.	Total.
LIABILITIES.	£	£	£	£	£	£	£
Notes in circulation not bearing interest	93,898	32,520	16,943	151,690	65,315	58,964	419,330
Bills in circulation	5,044	2,608	1,772	4,386	—	1,254	15,066
Balances due to other Banks	13,616	—	—	11,884	1,514	54,161	81,176
Deposits	541,522	219,407	186,396	856,471	480,615	478,131	2,762,546
Total average liabilities	654,082	254,536	205,113	1,024,431	547,446	592,511	3,278,121
ASSETS.	£	£	£	£	£	£	£
Coined gold, silver, and other metals ...	171,658	56,438	49,177	162,254	47,942	82,050	569,522
Gold and silver in bullion or ingots ...	—	—	—	—	12,051	1,462	13,514
Government securities	—	—	—	25,000	—	—	25,000
Landed property and Bank premises ...	35,954	15,325	14,714	33,256	11,294	17,724	128,269
Notes and bills of other Banks ...	5,481	4,372	2,962	14,065	7,145	4,413	38,441
Balances due from other Banks ...	48,242	—	—	9,701	878	6,918	65,741
Notes and bills discounted and other debts to Banks not before enumerated	807,781	370,828	324,139	1,062,914	744,338	1,007,376	4,317,378
Total average assets	1,069,120	446,963	390,994	1,307,191	823,651	1,119,946	5,157,868
	£	£	£	£	£	£	£
Capital stock paid up	500,000	1,200,000	1,250,000	750,000	600,000	400,000	4,700,000
Reserved profits at time of declaring last dividend	175,636	374,119	506,471	255,617	60,000	90,000	1,461,843
Rate of last dividend declared	10 per cent.	12½ per cent.	16 per cent.	12 per cent.	8 per cent.	10 per cent.	—
Original price of shares	£25	£40	£25	£4	£20	£4	—
Present price of shares	£41	£69	£56	£7 5s.	£26	£6 8s. 6d.	—

From the above it appears that the amount of coin, bullion, and Government securities held was eleven per cent. of the assets; and the liabilities amounted to sixty-three per cent. of the assets.

The rate of interest allowed to depositors by the several Banks during the past year varied as follows :—

Interest on fixed deposits, at 30 days' notice, at £3 10*s*. to £5.
" " for three months, and at 30 days' notice, £3 10*s*. to £5.
" " for six months, £4 to £5.
" " for twelve months, £4 10*s*. to £5.
Special arrangements for particular lodgments.

The course of exchange was as follows :—

On drafts issued during 1875—

On London, at 60 days' sight	1st	quarter,	1	per cent.	premium.
	2nd	"	1	"	"
	3rd	"	1	"	"
	4th	"	½	"	"
On neighbouring Colonies, at sight,	1st	quarter,	¼, ½,	1 per cent.	premium.
	2nd	"	¼, ½,	1 "	"
	3rd	"	¼, ½,	1 "	"
	4th	"	¼, ½,	1 "	"

On private bills purchased during 1875—

On London, at 60 days' sight	1st	quarter,	1	per cent.	discount.
	2nd	"	1	"	"
	3rd	"	1	"	"
	4th	"	½	"	"
On neighbouring Colonies, at sight ...	1st	quarter,	⅜, ½	per cent.	discount.
	2nd	"	⅜, ½	"	"
	3rd	"	⅜, ½	"	"
	4th	"	⅜, ½	"	"

The present (1875) rate of discount on local bills is—Under 65 days, 8 per cent.; 65 to 95 days, 8 per cent.; 95 to 125 days, 9 to 10 per cent.; and over 125 days, 10 per cent.

SAVINGS BANKS.

As evidencing the power of accumulation and thrifty habits of the industrial classes, it is only necessary to refer to the progress of one of the most popular of our local institutions—the Savings Bank of South Australia. It was established in 1848, incorporated by Act of Parliament, and is managed by a Board of Trustees appointed by the Governor. In addition to the Head Office, there are agencies established in thirty of the



National Bank.

principal townships throughout the Colony, in connection with Telegraph and Money Order Offices. Deposits are received in sums from One Shilling up to £500; but interest is only allowed up to £250. The rate of interest paid is now five pounds per cent. per annum. The following statement shows the operations and progress of the institution, at intervals, and gives a fair index of the position of the working classes who most largely avail themselves of the facilities afforded by the bank for the safe investment of small sums at a fair rate of interest.

Years.	Number of Depositors.	Amount deposited.	Amount withdrawn.	Amount of Depositors' Balances.	Total Funds.
		£	£	£	£
1848 ...	214	6,473	1,180	5,313	5,414
1851 ...	732	15,224	12 761	14,340	14,785
1856 ...	1,469	29,328	27,142	52,775	57,060
1861 ...	3,248	65,373	37,627	121,414	131,590
1866 ...	7,679	124,427	147,524	249,329	266,700
1871 ...	14,270	237,053	191,161	490,844	516,999
1875 ...	22,662	419,914	393,686	816,827	845,276

The total number of depositors last year was 22,662, the average sum at the credit of each being thirty-six pounds. The total deposits of the year amounted to £420,000, and the total funds of the institution to £845,276, invested chiefly in Government securities (£291,334) and on mortgage of free-hold property (£239,711). The Reserve Fund amounts to £28,448. In South Australia, the depositors in Savings Banks are one in ten of the population, in New South Wales one in twenty, and in Victoria one in thirty.

LAND AND ITS OCCUPATION.

Excluding that portion of the Province known as the Northern Territory, the total area of South Australia is about 383,328 square miles, or 245,329,920 acres. It may be roughly estimated that not more than 250,000 square miles are at present put to profitable use. Agricultural settlement has not extended 150 miles from the coast, and pastoral occupation may be said to have reached no farther than 500 miles, although squatters

have lately taken up large areas of land discovered by recent explorations (lying chiefly on the route of the overland telegraph), and which are considered capable of carrying stock. Twenty-six counties have been proclaimed up to date, embracing 40,967 square miles, or 26,218,880 acres. Of this large area, only 6,283,881 acres have been alienated from the Crown, amounting, nevertheless, to thirty acres for every man, woman, and child in the Colony, or one hundred and twenty acres for each male adult. About one in every five acres of the alienated land is under tillage; the remainder is used for pastoral purposes only. All land is surveyed by the Government prior to sale, and is divided into farms of extent varying from eighty to six hundred and forty acres, the necessary reserves being made for railways, public highways, watering of stock, &c. This land is thrown open for selection in large quantities, from 50,000 to 100,000 acres being put up at one time. At present there is as much as half a million of acres of land surveyed and open for immediate selection. The total area of land held for pastoral purposes beyond the boundaries of the counties mentioned is estimated to be 188,000 square miles.

The table on page 353 shows the names of counties, their area, the quantity of land sold, and the acreage surveyed and open for selection.

At the close of 1875, of the total area of land alienated from the Crown, namely 6,283,881 acres, 4,634,549 acres had been purchased in fee simple for cash, and 1,649,332 acres under the system of deferred payments. The demand for land during the past twelvemonths was very great, being more considerable than in any previous year, amounting to 686,050 acres, as compared with 424,130 acres in 1874. Of this quantity, 130,079 acres have been sold for cash, realizing £175,067; 555,971 acres were taken up by selectors who agreed to pay on the expiry of their term of credit £764,140, paying a deposit of £76,423, which is treated as interest during the term of agreement. With regard to the 130,079 acres of land sold for cash during the year, which, as has been stated, realized £175,067, it will be understood that 351 acres were



REAPING (*the End of the Field where the Machines are emptied*)—GAWLER PLAINS, SOUTH AUSTRALIA.

town lands, averaging £33 an acre, or £13 per acre more than the price realized for town lands in the previous year; that 6,701 acres were suburban lands which realized an average price of £2 17*s.* per acre, and the remainder was country land, the average price of which (where the land—namely, 28,337 acres—was sold outright at a fixed price) was £1 0*s.* 1½*d.*, or

Counties.	Area in Square Miles.	Area in Acres.	Purchased Land to 31st December 1875.	Extent of Land held by Freeholders.	Land open for Selection.
			Acres.		Acres.
Adelaide	1,161	743,040	594,369	313,010	1,220
Gawler	979	626,560	438,667	220,731	27,652
Light	848	542,720	518,183	372,598	198
Stanley	1,420	908,800	773,300	433,863	29,873
Victoria	1,527	977,280	603,793	178,464	5,128
Kimberley	1,440	921,600	39,793	1,737	9,414
Dalhousie	1,220	780,800	206,789	41,061	22,845
Fergusson	2,000	1,280,000	304,424	147,142	77,635
Daly	1,236	791,040	283,684	62,016	68,112
Frome	1,404	898,560	269,384	19,481	39,363
Hindmarsh	1,032	660,480	340,788	207,311	38,362
Sturt...	1,343	859,520	337,443	212,209	87,653
Eyre	1,340	857,600	245,403	138,203	61,796
Burra	1,767	1,130,880	217,473	151,950	2,279
Young	2,015	1,289,600	690	320	—
Hamley	2,135	1,366,400	80	80	—
Alfred	1,855	1,187,200	—	—	—
Albert	2,136	1,367,040	1,765	1,735	—
Russell	1,542	986,880	157,498	86,097	16,693
Buckingham ...	1,612	1,031,680	34,616	2,198	829
Cardwell	1,856	1,187,840	1,234	794	—
MacDonnell... ...	1,944	1,244,160	119,835	52,824	15,165
Robe...	2,028	1,297,920	236,922	239,552	9,286
Grey...	2,347	1,502,080	453,418	368,221	11,352
Flinders	1,100	704,000	100,979	67,663	44,873
Carnarvon	1,680	1,075,200	2,884	4,062	—
Total... ...	40,967	26,218,880	6,283,414	3,323,322	569,728
Pastoral Districts ...	—	—	2,238	352	—
Grand Total ...	40,967	26,218,880	6,285,652	3,323,674	569,728

1½*d.* per acre above the upset price of one pound. 86,784 of the acres which have been sold on credit, and the purchase of which is now completed, realized £1 4*s.* 7*d.* an acre, or 4*s.* 7*d.* above the upset price of one pound.

Turning to the sales of Crown lands on credit during the year 1875, and which have been stated as amounting to

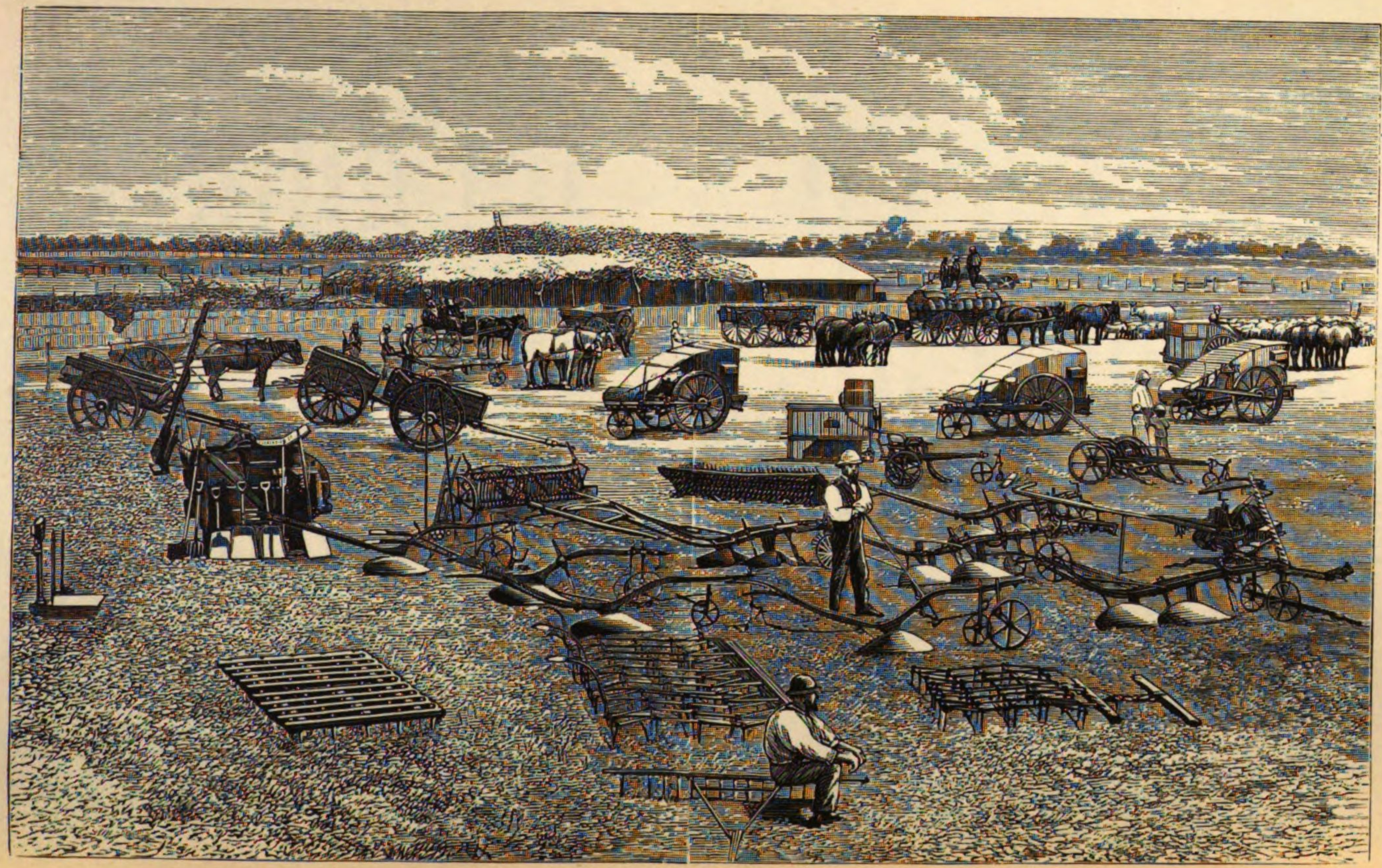
555,971 acres, 516,640 acres were selected by agriculturists who entered into an agreement to reside upon the land either personally or by a servant, and to carry out the necessary conditions of improvement and cultivation, agreeing to pay on the average £1 7*s.* 6*d.* per acre at the termination of their agreement, when they would become entitled to the fee simple of the land. Selections which had been taken up previously, and had been forfeited either voluntarily or by reason of neglect in carrying out the requirements of the Act, were re-selected to the extent of 25,387 acres, and the average price agreed to be paid by the new holders was £1 10*s.* 8*d.* per acre.

The following table shows the number of acres sold on credit since the introduction of the existing land system and the aggregate amount to be paid on the termination of the agreements :—

	Area in Acres.	Amount.
1871	289,892	£372,536
1872	299,957	397,284
1873	279,512	435,485
1874	352,166	596 096
1875	555,971	764,140
Total ...	1,777,498	£2,565,544

The total quantity of land taken up during the five years since the Act has been in operation is 1,777,498 acres, for which £2,565,544 was agreed to be paid. Of this amount, £2,406,251 still remains on credit awaiting the termination of the agreements.

The following are the principal provisions of the Land Act of 1872 :—"All waste lands, other than township and suburban, have a fixed value put upon them by the Commissioner of Crown Lands, not less than £1 per acre. In improved or reclaimed lands the cost per acre of the improvements and reclamation is added to the upset price of £1 per acre. Those lands which have been open for selection, or which have been offered at auction, and neither selected nor sold, may at the end of five years be offered for sale in blocks of not more than 3000 acres, on lease for ten years, at an annual rental of not less than 6*d.* per acre, with a right of purchase at any time during the currency of the lease at £1 per acre.



General View of Implements and Stock on the Farm of Mr. John Riggs, Gawler Plains.

"When any lands are declared open for selection, by proclamation in the *Government Gazette*, at a fixed price, a day is appointed for receiving applications for sections, not to exceed in the aggregate 640 acres, or one square mile. The person making the application shall pay at the time a deposit of ten per cent. on the fixed price, which sum shall be taken as payment of three years' interest in advance upon the purchase money. If the price of the land is £100, the selector would have to pay a deposit of £10, which will be all he will be required to pay the Government for three years—about three and three-quarters per cent. per annum. At the end of three years he will have to pay another ten per cent., which will also be received as interest for the next three years. If at the end of six years he is not prepared to pay the whole of the purchase money, he can obtain other four years' credit on payment of half the purchase money, and interest in advance on the other half, at the rate of four per cent. per annum. Lands which have been open for selection two years, and not taken up, may be purchased for cash. The scrub lands may also be taken up on very favourable terms, on long leases.

"A credit selector may reside on his land either personally or by substitute. The personal resident, however, has advantages which he who resides by deputy has not. In cases of simultaneous applications for the same block, the personal resident has the preference over the other; and at the end of five years, the selector who has resided on the land and made all the required improvements and complied with all the conditions may, by paying his purchase money, obtain the fee simple of his selection. The selector who occupies by substitute cannot get the freehold until the end of six years.

"Purchasers upon credit will be required to reside, either personally or by deputy, upon the land at least nine months in the year; and absence for any longer time than three months in one year renders the agreement liable to forfeiture.

"The credit purchaser will be required to make substantial improvements upon the land before the end of the second year, to the extent of 5*s.* per acre; before the end of the third year, 7*s.* 6*d.* per acre; before the end of the fourth year,

10*s.* per acre. 'Such improvements to consist of all or any of the following, that is to say:—Erecting a dwelling-house or farm building, sinking wells, constructing water tanks or reservoirs, putting up fencing, draining, or clearing or grubbing the said land.' The fences must be of a substantial character.

"The credit purchaser is required, during each year until the purchase money is paid off, to plough and have under cultivation at least one-fifth of the land; but in the event of his not cultivating this quantity during the first year, he will be required to cultivate two-fifths during the second year."

The diagram A (opposite) shows at a glance the progress made in settlement and agriculture during the last twenty-five years.

AGRICULTURE.

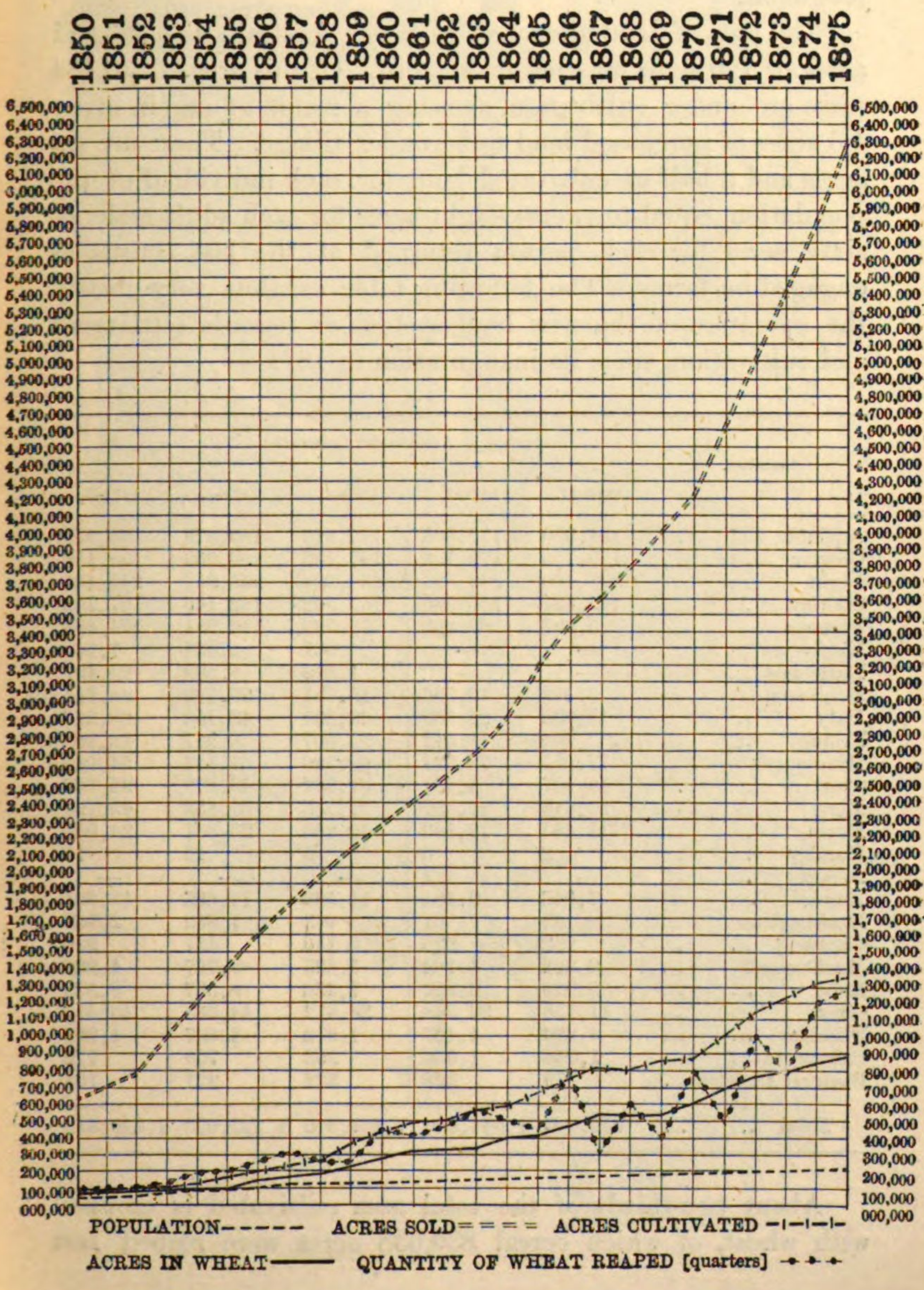
Where over four-tenths of the male population of a community are engaged in farming pursuits, the necessity for collecting authentic information regarding the progress of agriculture is sufficiently apparent. For many years past the annual statistics collected on this subject have afforded a mass of records the value of which every year becomes greater.

The Special Commissioner of the Crown Colonies at the Vienna Exhibition (Mr. William Robinson, now Governor of the Bahamas), in reporting to the Imperial Government, said:—"Of all the British Colonies, South Australia exhibits the most striking picture at present of farming industry, and on the whole seems to be the place where, good as the labourer's condition may be elsewhere, he has, by prudence and industry, the best chance of rising in the social scale, and becoming in his turn the employer of labour," and further, "the yeomanry who have found a home in South Australia, and who are at once tillers of the soil and employers of labour, are more than any one class the real bone and sinew of the Colony; and the industry which has so widely covered the land with farms, homesteads, tillage, and fencing of every description, has probably never been equalled in its result in any British Colony in the same number of years by the same amount of population. It is by the spread of agriculture that the greatest amount of industrial prosperity has been created,

A.

ADELAIDE, SOUTH AUSTRALIA.

DIAGRAM SHOWING THE POPULATION, ACRES SOLD, ACRES CULTIVATED, ACRES IN WHEAT, AND WHEAT HARVESTED.

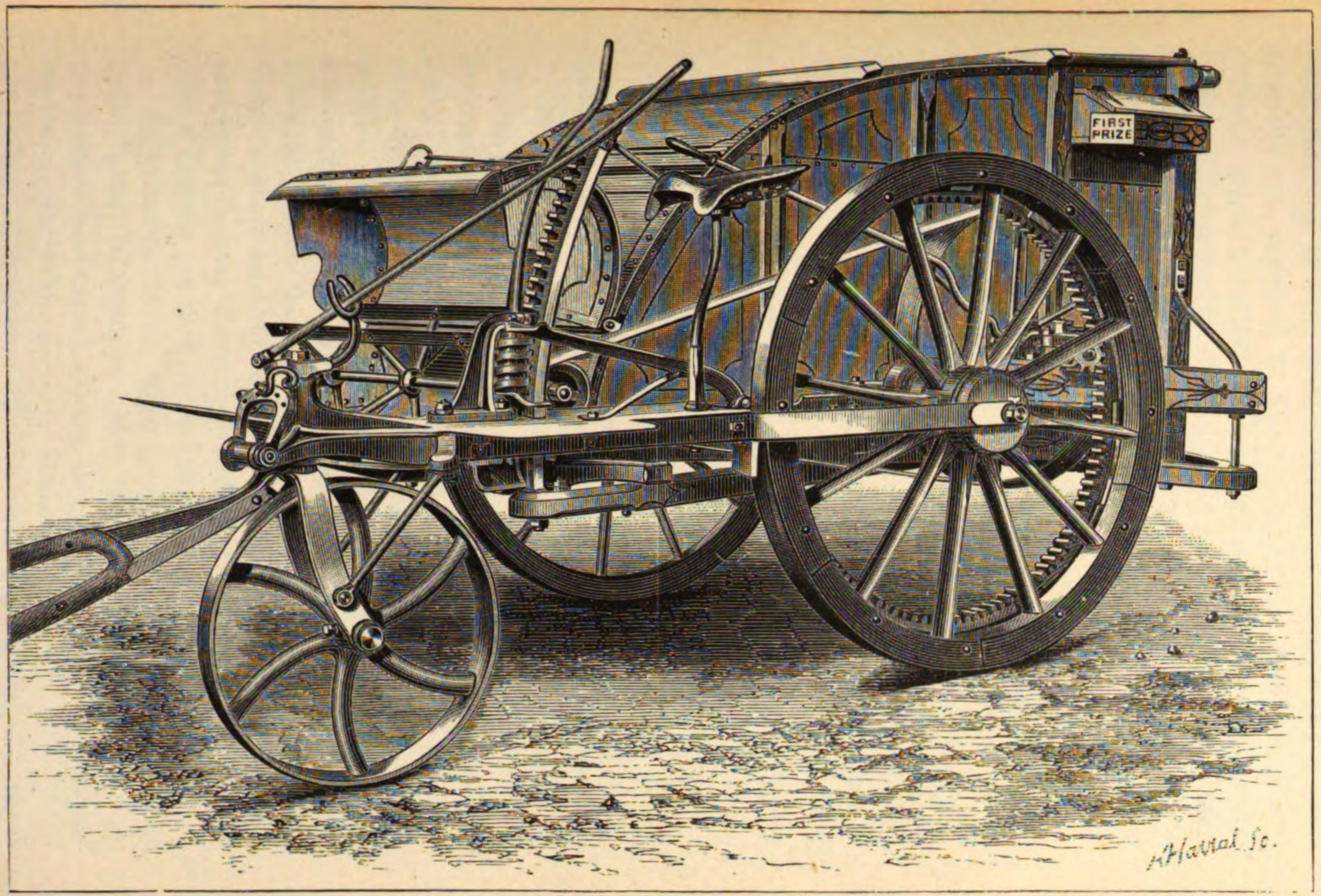


and the real settlement of the country most effectually accomplished." An analysis of the statistics of the last fifteen years abundantly proves the soundness of His Excellency's judgment.

The area of land alienated in South Australia is 6,283,881 acres, or 120 acres for each male adult. Of this area, 1,330,484 acres are under cultivation, showing a result of one in every 4·3 acres of purchased land to be under tillage. There are six acres and a half of cultivated land for each individual of the population, equal to twenty-eight acres for each adult male, or sixty acres for each person returned at the last census as engaged on farms. The following table exhibits very clearly the operation of the new land system, as regards settlement and cultivation, since its inauguration in 1871 :—

Counties.	Acres under Cultivation.				
	1870–71.	1871–2.	1872–3.	1873–4.	1874–5.
Adelaide	181,360	177,808	171,615	169,378	165,350
Gawler	159,755	179,192	197,193	193,002	199,158
Light	248,400	262,526	264,624	251,951	245,491
Stanley	125,421	155,580	167,502	162,160	167,715
Victoria	5,697	20,263	79,539	116,981	154,494
Kimberley	—	—	931	2,054	7,760
Dalhousie	—	—	1,894	8,569	29,497
Fergusson	1,412	6,796	10,731	25,789	38,744
Daly	15,335	24,869	43,231	43,156	68,246
Frome	764	542	507	6,247	16,268
Hindmarsh... ...	77,585	73,911	63,926	61,153	54,942
Sturt	40,107	34,221	37,782	43,679	35,767
Eyre	27,648	27,937	37,585	37,853	45,790
Burra	11,445	18,103	19,865	23,981	24,943
Hamley	2	6	5	16	14
Albert	—	1	—	—	—
Russell	7,946	9,234	11,503	12,686	13,591
Buckingham ...	99	94	463	1,682	2,763
Cardwell	262	229	150	131	290
MacDonnell ...	2,922	4,163	5,535	5,767	4,936
Robe	5,924	6,922	7,676	8,537	8,573
Grey	41,158	36,548	36,612	44,684	40,313
Flinders	4,240	4,427	4,612	4,637	4,903
Carnarvon	1,045	1,056	993	759	772
Pastoral Districts ...	479	228	372	221	164
Total	959,006	1,044,656	1,164,846	1,225,073	1,330,484

About two-thirds of the total area cultivated is cropped with wheat, of which cereal 839,638 acres were reaped last



SIDE VIEW OF REAPING MACHINE, SHOWING HOW SPEED IS OBTAINED.

year, yielding an aggregate of 9,862,693 bushels, the largest quantity yet produced in the Colony. The crop was a fair average one, of excellent quality, and, considering the scarcity of farm labour, was safely and early secured. It is important to note that, whilst the area of wheat grown has increased more than one hundred per cent. during the last ten years, the population has only increased thirty per cent.

The harvest now being gathered is expected to produce twelve million bushels, which will permit of an export of over 230,000 tons of bread-stuffs, after providing for home requirements.

Annexed is a statement showing the total area of land under cultivation, the acreage under wheat, the gross produce of the harvest, and the average yield per acre at intervals of five years :—

Seasons.	Acres Cultivtaed.	Acres under Wheat.	Produce, Wheat.	Average per Acre.	
			Bushels.	Bush.	lbs.
1860–61	428,816	273,672	3,576,593	13	4
1865–6	660,569	410,608	3,587,800	8	44
1870–71	959,006	604,761	6,961,164	11	30
1874–5	1,330,484	839,638	9,862,693	11	45

With regard to the comparatively low average yield above shown, it must be borne in mind, in judging of the relative productiveness of the soil of South Australia as compared with that of other countries, that a great portion of the land has been sown with wheat continuously for many successive years without manure or rest, and, being in the hands of small proprietors, has received only the minimum of cultivation. This, of course, tends to reduce the general average; but there are many districts where farming is carried on on a large scale, and with proper appliances, where the yield of this cereal is from ten to fifteen bushels per acre beyond the average shown above.

As evidence of the high quality of the South Australian grain, it may be mentioned that the prize wheat exhibited at the Agricultural Shows during the past ten years has averaged 68 lbs. weight to the Imperial bushel.

In 1865–6 there were 423,881 acres under grain, viz. wheat,

barley, oats, and peas, and in 1874–5 there were 860,475 acres; so that within the period specified the acreage so occupied was more than doubled.

Under other crops, flax, hay, potatoes, orchard, garden, vineyard, and fallow land, there were 229,182 acres in 1865–6, and 442,933 in 1874–5, or nearly double. The total quantity under cultivation at the earlier date was 660,569, and at the later, 1,330,484, or more than double the acreage. The extent of land now under hay cultivation is 160,931, and of fallow-land, 264,327 acres. In 1858, only eighteen years after the Province was founded, there were 89,945 acres of land under wheat culture; in 1865–6, there were 410,608; and in 1874–5, no less than 839,638 acres.

The following table shows the extent of land under cultivation, and each description of crop, at quinquennial intervals since 1860–61 :—

Crops.	Acres under Cultivation in Years			
	1860–61.	1865–6.	1870–71.	1874–5.
For Grain—				
Wheat	273,672	410,608	604,761	839,638
Barley	11,336	9,362	22,912	13,724
Oats	2,273	2,872	6,188	2,785
Peas	—	969	3,719	4,328
For Green Forage—				
Wheat, Barley, Oats, &c. ...	2,174	2,514	2,600	1,117
Sorghum	116	230	—	—
Lucerne	1,726	1,424	3,445	6,699
Permanent Artificial Grasses...	1,836	3,408	3,712	19,260
Flax	—	—	186	274
Other Crops	584	1,272	829	434
Hay	55,818	101,996	140,316	160,931
Potatoes	2,348	2,775	3,376	4,582
Orchard	2,147	2,554	2,763	3,077
Garden	3,910	3,919	4,345	4,257
Vineyard	3,180	6,629	6,131	5,051
Fallow Land	67,696	110,037	153,723	264,327
Totals	428,816	660,569	959,006	1,330,484

Vine culture is an important and progressive industry. There are 5050 acres of land devoted to this purpose, the total number of vines being 5,155,988, of which 4,874,507 are in



CLARENDON VINEYARD, NEAR ADELAIDE.

bearing. The produce of these vineyards for the year ended March 1875 was 648,186 gallons of wine, about one hundred and thirty gallons per acre.

The suitability of the soil and climate of South Australia to the growth of wine was soon discovered by the early settlers, some of whom had brought from Europe a variety of high class vine cuttings. The slopes of the hills produce wines of a full-bodied character similar to those of Spain and Portugal, whilst those made in the more elevated districts resemble the lighter wines of the Rhine. Whilst the local demand is fully supplied at very cheap rates, a considerable export trade in wines of a higher character is carried on, and which might be increased to a great extent but for obstructive fiscal laws. Whilst the lower class wines of the Continent are admitted to the ports of the Mother Country at a minimum rate of duty, the Customs dues charged upon superior wines from Australia are so high as to be almost prohibitory.

That the wines of South Australia are, as a rule, of a high character is proved by the fact that they have always been awarded prizes at the several Great International Exhibitions.

The introduction of flax-growing into the ordinary routine of farm operations, has been followed by considerable success. The prices realized for this commodity in the European markets have been very encouraging.

Considerable attention has also been paid to the manufacture of preserved fruits, and the drying of raisins and currants. This branch of industry is rapidly progressing, and, whilst it now goes far to supply local requirements, will probably soon develop into an export trade.

Almond trees are of rapid growth, and large quantities of a superior description of soft-shell almond are gathered yearly for home consumption and for shipment.

South Australia possesses all the conditions requisite for the successful and profitable culture of the olive. This tree, like the vine, was early introduced into the Colony, and its growth and productiveness have been so remarkable that large plantations have been established and stocked with the best Con-

tinental varieties. Olive oil of the most delicate character has been expressed, and gained awards at the various Exhibitions. Its purity and general superiority over the imported article of commerce has acquired for it a first position in the market. The produce of the plantations is eagerly purchased by persons who have entered upon the business of the manufacture of oil. It may be stated, as showing the importance which is attached to the cultivation of the olive, as of the mulberry (of which several plantations of the most suitable kinds exist for the development of sericulture), the almond, vine, orange, fig, and hop, that the land laws provide that the planting and cultivation of one acre of land with any of these trees shall be equivalent to the cultivation of six acres of cereals.

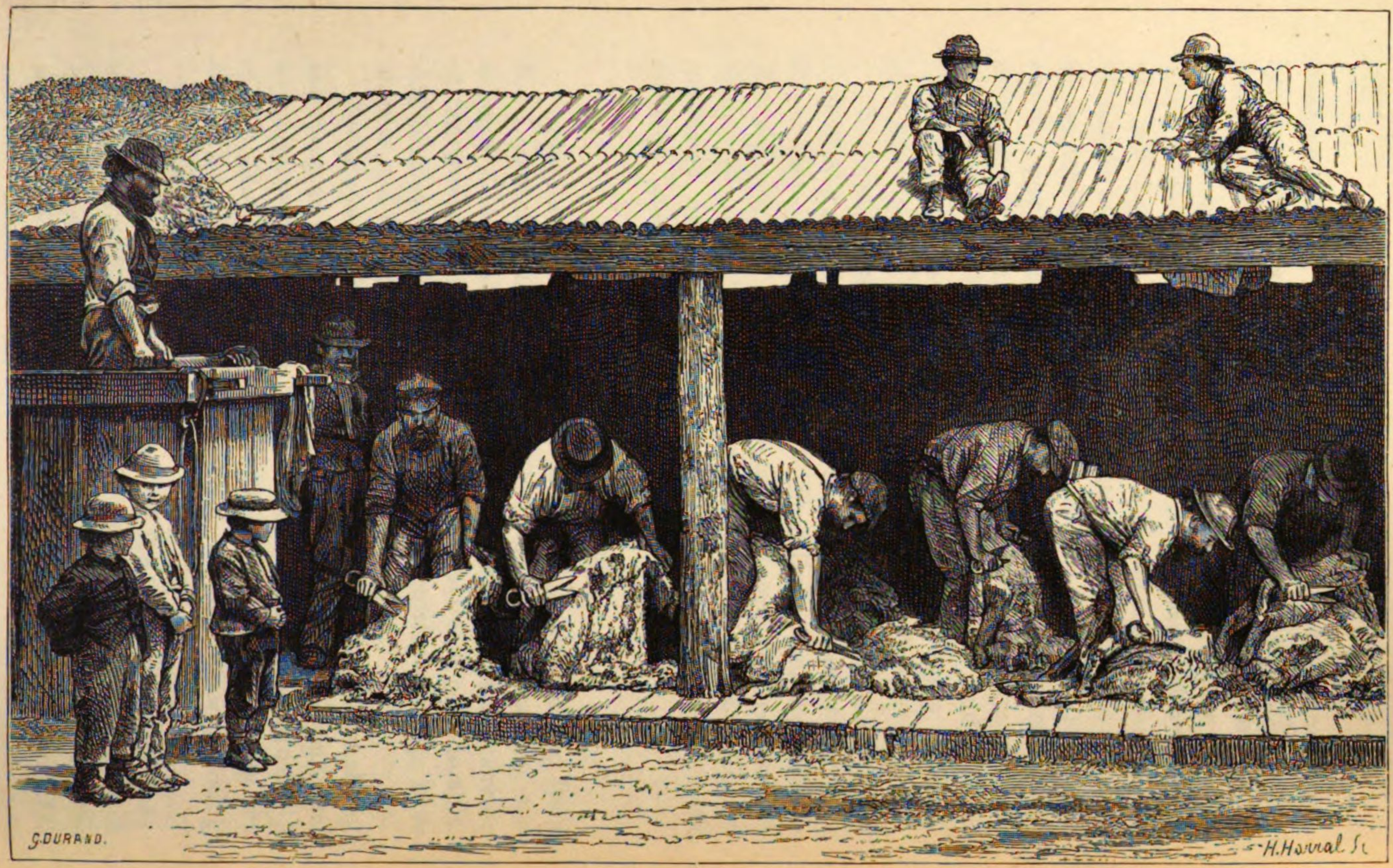
Orchards, gardens, and vineyards abound, and, in short, the variety and excellence of the fruits and vegetables produced in the Colony cannot be surpassed. The climate and soil enables the productions of temperate and tropical regions to be cultivated almost side by side, and throughout the year; and offers an unlimited field of profitable occupation in connection with ordinary farming pursuits.

PASTORAL OCCUPATION.

Notwithstanding the large area of land lately alienated from the Crown, and the extension of agricultural operations, the acreage of land taken up for squatting purposes and the increase in the number of flocks and herds have been very considerable. All descriptions of stock, whether horses, cattle, or sheep, have thriven and increased rapidly.

Of late years the enclosure and sub-division of runs (enabling the sheep to roam at will during the whole year) has been found to produce greatly improved results, both as regards the quality of the stock and of the wool. Large numbers of sheep are owned by settlers, who advantageously combine sheep-farming with agriculture.

Some conception of the growth of the pastoral interest may be formed from the fact that, whilst in 1851 the total area of land leased from the Crown for pastoral purposes was 15,000 square miles, at the present time there are no less than 200,000



SHEEP SHEARING.

square miles in occupation. During the same period the number of horses has increased from 6500 to 93,000; of horned cattle from 75,000 to 185,000; and of sheep from 1,000,000 to over 6,000,000, whilst the exports of wool have increased from 4000 to 118,000 bales.

The following table shows the progressive increase in horses, cattle, and sheep, at each quinquennial period between 1856 and 1875:—

Years.	Horses.	Cattle.	Sheep.
1856	22,260	272,746	1,962,460
1861	52,597	265,434	3,038,356
1866	70,829	123,820	3,911,610
1871	78,125	143,463	4,412,055
1875	93,122	185,342	6,120,211

With reference to the slight comparative increase in cattle it should be noted that more profitable results are found to accrue from the breeding of sheep than from great cattle. The latter pursuit is more extensively followed in the neighbouring colonies.

During the last ten years the average price of first-class fat bullocks has averaged £14 10*s*., and of first-class fat wethers, 15*s*. per head.

The enclosure of the sheep runs, the formation of dams and reservoirs in which large bodies of water can be stored, and the sinking of wells, are the most important improvements required, and are those to which the greatest attention is now being paid. By these means an immense area of land has been opened up, and stocked with both sheep and cattle.

Almost limitless tracts of country bordering on the trans-continental telegraph line, as well as land laid open by recent explorations, are awaiting pastoral occupation.

MANUFACTURES.

A few years ago, flour mills and tanneries were almost the only representatives of local manufactures; whilst these have largely increased in number and efficiency, many important

additions have been made to the list. The following is a statement of the more important; some are conducted on an extensive scale, and, from the constantly increasing number of hands employed, manufacturing industry generally would appear to be in a highly flourishing state. It will be noticed that most of the industries mentioned have their raw material at hand in the produce of the country, and are for that reason much more likely to be permanent in their character.

Milling is a very important branch of trade, over seventy-five thousand tons of flour having been exported during the past year. There are eighty-five steam flour mills in the Province, with 1500 horse-power, driving 275 pairs of stones.

Four meat-preserving establishments are in operation, and there are eight boiling-down works.

Sixty tanneries and fellmongeries, and several large wool-washing works, are distributed throughont the country; ten soap and candle factories; five bone-dust mills; and two glue and size works.

Thirty-one steam saw mills, twenty-seven foundries, eighty-six agricultural implement works (chiefly for reaping and winnowing machines), and twenty-nine coach and waggon builders' shops are in active work.

In addition to five patent slips, there are eight ship and twelve boat building yards.

Several marble and sixteen slate quarries of excellent quality, and over one hundred building-stone quarries, have been opened, of which latter nineteen are free-stone, a superior description being largely used in public and private buildings. There are seventy brickyards in operation (including six for fire-bricks), sixty limekilns, and seven potteries and tile and pipe works.

The gasworks of the Colony are eight in number, of which two are for the supply of the City of Adelaide and suburbs, one is at Port Adelaide, and the remaining five are in the principal country towns.

Besides one woollen tweed factory, there are six clothing factories, four hat factories, twelve boot and shoe factories,

and four dye works. There are also three flax mills, three rope walks, and two brush manufactories at work.

There are twenty-nine breweries; thirty soda-water and cordial factories; one hundred and two wine-making establishments; ten biscuit bakeries; ten jam and preserve and seven confectionery manufactories; six dried fruit and three olive-oil factories, and one ice-work.

Among other miscellaneous local productions and manufactures, are the following:—Barilla, billiard table, baking powder, blacking, cayenne pepper, cement, cigars, fibre, glass bottles, plaster of Paris, washing machines, sauces and pickles, salt, safety fuze, gas stoves, iron safes, bedsteads, galvanized iron and tin ware.

IMPORT AND EXPORT TRADE.

The expansion of commerce and the development of the material resources of South Australia are clearly exhibited in the returns under the above head. Although able, as large agricultural and pastoral producers, to supply ourselves with the greater portion of the necessaries of life, we are dependent upon Great Britain and foreign markets for a considerable number of articles which enter into general consumption.

The total value of the imports and exports to and from each country, exhibiting the balance of trade, is shown in the subjoined table. The combined import and export trade of 1875 amounted to £9,000,000 sterling, of which £4,200,000 were imports, and £4,800,000 exports, showing a balance in favour of South Australia of £600,000. The total external trade averaged £45 per head of the population, or £175 for each adult male. The imports amounted to £20 per head of the population, and the exports to £24; or, taking the adult male population as the basis of the calculation, the imports amounted to £80, and the exports to £96, or an excess of exports over imports of £16 per adult male.

Countries.	Imports.	Exports.	Excess of Imports.	Excess of Exports.
	£	£	£	£
Great Britain	2,381,673	2,612,817	—	231,143
Victoria	822,660	852,715	—	30,054
New South Wales	477,147	689,115	—	211,967
Western Australia	36,347	62,372	—	26,025
New Zealand	9,406	44,115	—	34,709
Queensland	22,888	216,800	—	193,912
Tasmania	40,272	2,794	37,478	—
India	36,969	30,679	6,289	—
Ceylon	3,972	4,187	—	215
Cape Colony	1,133	137,018	—	135,885
Natal	5,653	44,445	—	38,792
Mauritius	95,743	38,732	57,011	—
Singapore	5,226	241	4,984	—
Hong Kong	28,379	40	28,339	—
Canada	21.687	—	21,687	—
United States	28,502	—	28,502	—
New Caledonia	81	46,315	—	46,234
China	82,933	9	82.924	—
Sweden and Norway ...	63,068	—	63,068	—
Java	40,061	19,583	20,477	—
Brazil	—	3,000	—	3,000
France	—	70	—	70
Total	£4,203,802	£4,805,051	£350,761	£952,010

Of the total imports, £4,203,802 in value, more than one-half, viz. £2,381,673, came from the United Kingdom, £882,660 from Victoria, £477,147 from New South Wales, £214,645 from Foreign States, and the remainder from various British possessions.

Of the total exports, £4,805,051 value, products representing £2,612,817 were exported to the Mother Country, £852,715 to Victoria, £689,115 to New South Wales, £68,977 to Foreign States, and the remainder to other British possessions.

The following table shows the total imports and exports for the years stated :—

IMPORT AND EXPORT TRADE.

Years.	Total.	Imports.	Exports.
	£	£	£
1851	1,292,864	690,777	602,087
1856	3,032,269	1,366,529	1,665,740
1861	4,008,329	1,976,018	2,032,311
1866	5,693,879	2,835,142	2,858,737
1871	5,740,419	2,158,022	3,582,397
1875	9,008,853	4,203,802	4,805,051

Since 1851, the commerce of the Colony has increased seven-fold, from £1,292,864 to £9,008,853 sterling. This is clearly shown in Diagram B (page 368). The last five years have shown a rapid expansion, trade having increased from £5,740,419 to £9,008,853, or by sixty per cent.

The following table shows for each of the past ten years the total import and export trade, the total imports showing the home consumption and re-exportations; also, the total exports, distinguishing those of the produce of the Colony, and showing the balances of produce exported over imports consumed:—

Years.	Combined Import and Export Trade.	Total Imports.	Imports retained for Home Consumption.	Imports re-exported.	Total Exports.	Exports of Produce of the Colony.	Balance Produce exported over Imports consumed.
	£	£	£	£	£	£	£
1866	5,693,879	2,835,142	2,516,128	319,014	2,858,737	2,539,723	23,595
1867	5,671,016	2,506,394	2,117,867	388,527	3,164,622	2,776,095	658,228
1868	5,057,810	2,238,510	2,023,036	215,474	2,819,300	2,603,826	580,796
1869	5,747,805	2,754,770	2,484,174	270,596	2,993,035	2,722,438	238,264
1870	4,449,281	2,029,793	1,733,603	296,190	2,419,488	2,123,297	389,694
1871	5,740,420	2,158,022	1,868,368	292,536	3,582,397	3,289,861	1,521,493
1872	6,540,194	2,801,571	2,587,233	214,536	3,738,623	3,524,087	936,854
1873	8,428,960	3,841,101	3,527,163	302,667	4,587,859	4,285,192	758,029
1874	8,386,145	3,983,290	3,438,874	534,580	4,402,855	3,868,275	429,401
1875	9,008,853	4,203,802	3,840,851	362,951	4,805,051	4,442,100	601,249

In order further to illustrate the description of our external trade, the following statements are appended, showing respectively the quantities or values of the chief articles imported and exported in the five years ending with 1874:—

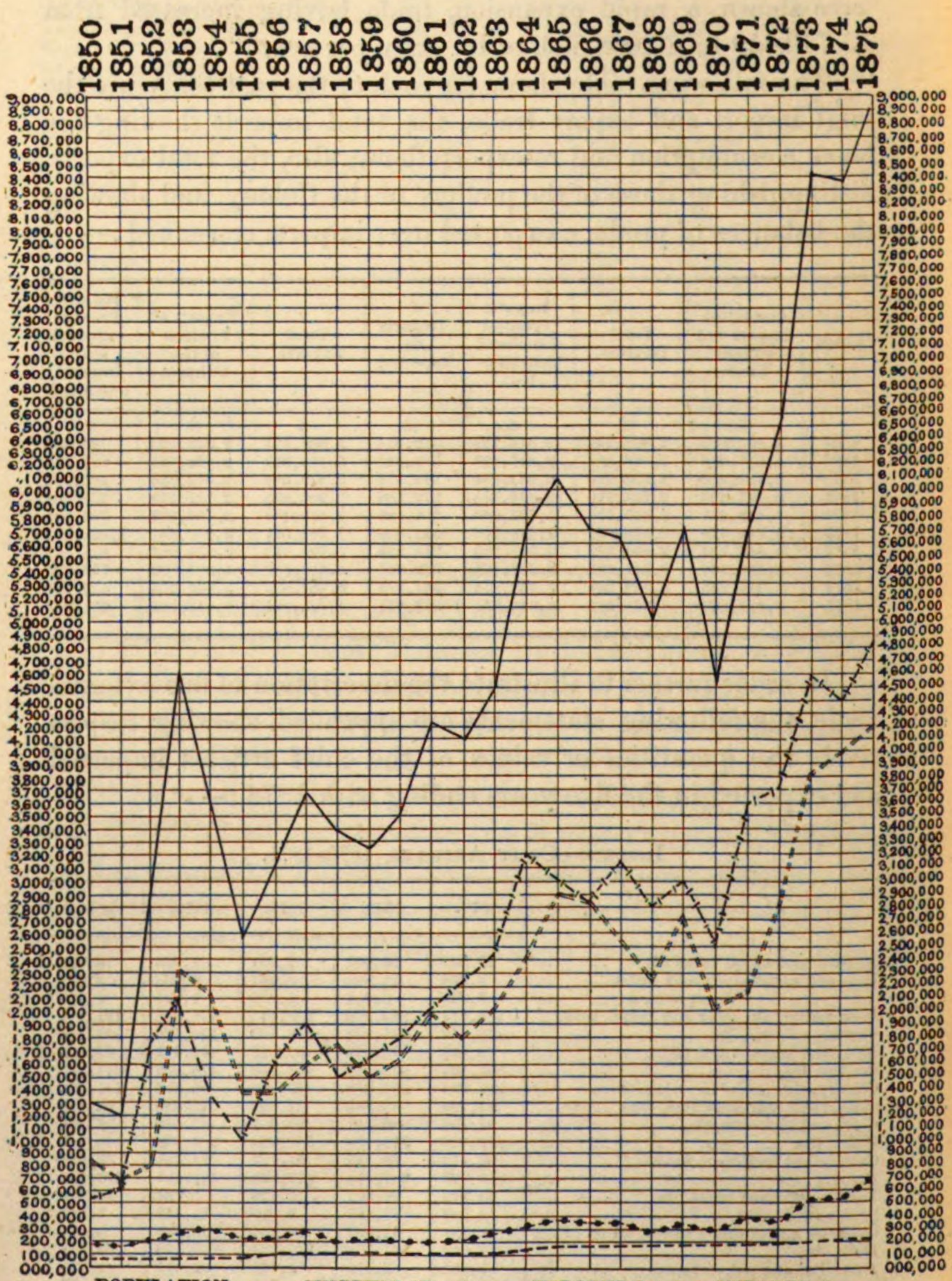
IMPORTS—CHIEF ARTICLES, 1870–1874.

	1874.	1873.	1872.	1871.	1870.
Apparel and slops, value (£)	19,383	20,951	2,832	1,246	6,452
Bags and sacks—Cornbags, bales	8,256	11,900	3,407	5,064	3,822
Woolpacks, do.	3,358	3,216	1,886	1,818	1,135
Beer, porter, ale, cider and perry, galls ...	215,211	283,375	218,455	174,295	191,114
Blasting-powder, lbs.	179,676	345,252	418,120	156,720	145,750
Boots and shoes, value (£)...	60,010	73,422	62,018	48,441	53,496
Candles, lbs.	807,497	618,189	461,900	416,338	471,589
Chicory, lbs.	106,281	191,072	73,926	55,886	107,532
Coals, coke, and other fuel, tons	88,756	83,583	82,502	73,983	52,310
Cocoa and chocolate, lbs.	84,196	90,911	59,337	52,089	56,402
Coffee, lbs.	413,896	371,770	346,234	380,060	549,167
Cutlery and hardware, value (£)	33,579	30,447	21,734	14,011	38,617
Drapery do.	863,865	947,455	647,062	467,697	499,046
Earthenware and china do.	25,979	21,807	10,429	7,764	11,493
Fruit (dried), cwt.	13,243	15,167	9,019	11,110	8,267
Groceries and oilmen's stores, value (£)...	48,231	53,902	26,834	26,805	30,154
Hops, lbs.	227,953	274,770	246,853	238,790	310,558
Iron—Bar and rod, tons...	3,601	2,778	3,964	2,457	1,954
Sheet and hoop, do.	1,137	1,289	713	667	1,460
Pig, do.	749	512	331	144	686
Manufactures, value (£)	212,489	232,091	95,811	98,183	70,254

B.

ADELAIDE, SOUTH AUSTRALIA.

DIAGRAM SHOWING THE POPULATION, SHIPPING, EXPORTS, IMPORTS, AND COMBINED IMPORT AND EXPORT TRADE.



IMPORTS—CHIEF ARTICLES, 1870–1874 (*continued*).

	1874.	1873.	1872.	1871.	1870.
Implements and tools, value (£)	40,130	36,719	23,180	29,128	17,403
Jewellery, plate, and plated goods, do. ...	39,177	30,670	21,425	15,624	11,367
Malt, centals...	28,341	36,392	22,585	29,773	24,615
Oil—Sperm and other fish oils, gallons ...	6,883	12,698	6,116	12,692	8,693
Linseed, rape, hemp, &c., do. ...	80,173	79,516	72,742	54,966	33,234
Mineral and other oils, do. ...	332,230	237,137	210,322	222,456	167,460
Potatoes, tons	1,413	5,022	2,591	4,774	4,717
Rice, do....	294	488	310	257	260
Saddlery and harness, value (£)	20,406	19,223	16,951	11,385	7,804
Sewing machines, do.	16,205	18,186	12,998	—	—
Spirits—Brandy, gallons	116,013	83,215	87,148	54,787	32,990
Rum, do.	42,941	25,804	29,638	27,128	29,634
Gin, do.	18,558	21,408	13,560	15,283	16,245
Whisky, do.	24,407	20,596	11,615	12,403	13,416
Sugar, cwt.	159,277	141,262	135,227	116,556	59,501
Tea, lbs.	1,699,708	1,678,325	1,025,667	1,221,848	854,887
Tin—Block, value (£)	15,279	25,433	14,895	8,037	5,628
Tobacco, lbs.	400,623	379,507	277,454	241,820	331,012
Cigars, do.	21,129	23,275	14,944	13,748	18,715
Wine, gallons...	45,956	34,881	31,616	22,966	17,611
Wood—Palings, No.	1,566,327	1,687,764	1,098,914	840,635	461,315
Sawn, hewn, &c., loads	22,504	29,970	16,450	11,889	15,976

EXPORTS—CHIEF ARTICLES, 1870–1874.

	1874.	1873.	1872.	1871.	1870.
Animals—Horses, No.	42	74	80	162	273
Sheep, do.	1,385	1,049	1,017	430	62
Bacon and Hams, cwt.	35	30	143	29	10
Bark, tons	2,650	4,580	7,850	5,073	5,431
Bones, do.	195	210	880	217	520
Beer, galls.	37,710	20,564	21,257	23,746	21,930
Biscuits, cwt.	862	1,084	496	335	233
Butter and cheese, cwt.	1,206	615	1,564	565	202
Corn—Flour, tons	58,635	57,171	38,319	46,841	27,371
Barley, bushels	6,678	3,658	20,904	28,152	19,672
Bran and pollard, tons	2,461	1,477	2,220	3,816	2,167
Wheat, bushels	1,538,464	3,837,616	1,261,424	2,520,432	376,632
Drapery, value (£)	33,839	29,890	26,605	19,687	31,320
Eggs, do.	7,987	8,158	7,965	8,701	8,406
Fish (dried), cwt.	701	277	509	676	823
Fruit (fresh), value (£)	3,768	3,329	3,385	2,292	2,970
Dried, cwt.	610	1,500	1,590	1,325	822
Groceries, value (£)	1,199	2,962	6,439	9,832	9,575
Gum, cwt.	995	476	851	555	5,415
Hay, tons	198	162	663	297	258
Hides and skins, value (£)	16,139	10,593	13,472	8,798	4,266
Honey, cwt.	4	201	34	131	46
Hops, lbs.	21,105	—	—	—	—
Jam, value (£)	3,216	5,969	5,570	4,176	7,396
Leather, cwt.	958	1,329	3,327	4,508	2,884
Metal—Copper, do.	132,587	141,744	149,050	127,911	109,211
Ore—Copper, tons	22,854	27,382	26,964	20,127	20,886
Preserved meats, cwt.	11,248	13,943	12,526	10,000	4,885
Salt, tons	80	184	277	70	214
Soap, cwt.	1,533	—	—	—	—
Sugar, do.	917	4,162	15,126	5,015	1,790
Tallow, do.	25,670	40,106	33,700	63,328	30,142
Tea, lbs.	21,238	46,648	135,038	69,597	123,798
Tobacco, lbs.	40,509	30,518	42,826	57,752	77,631
Wax, cwt.	50	173	41	126	51
Wool, do.	39,844,024	35,973,434	34,650,631	32,656,427	26,218,284
Wine—South Australian, gallons ...	59,174	46,400	44,910	21,788	50,085
Foreign, do. ...	5,586	543	2,768	3,101	3,394
Spirits—Brandy, do. ...	10,657	8,140	9,913	7,590	15,619
Gin, do. ...	1,644	331	539	381	1,212
Rum, do. ...	2,305	2,023	2,429	1,826	4,980
Whisky, do. ...	1,537	970	682	732	960

STAPLE PRODUCTS.

It will be necessary, however, to refer more particularly to the chief sources of the material wealth of the country, which may be classified under the heads of agricultural, pastoral, and mining produce. The following abstract shows the progress made in the exports of staple products from 1851 to the present time, stated at intervals of five years:—

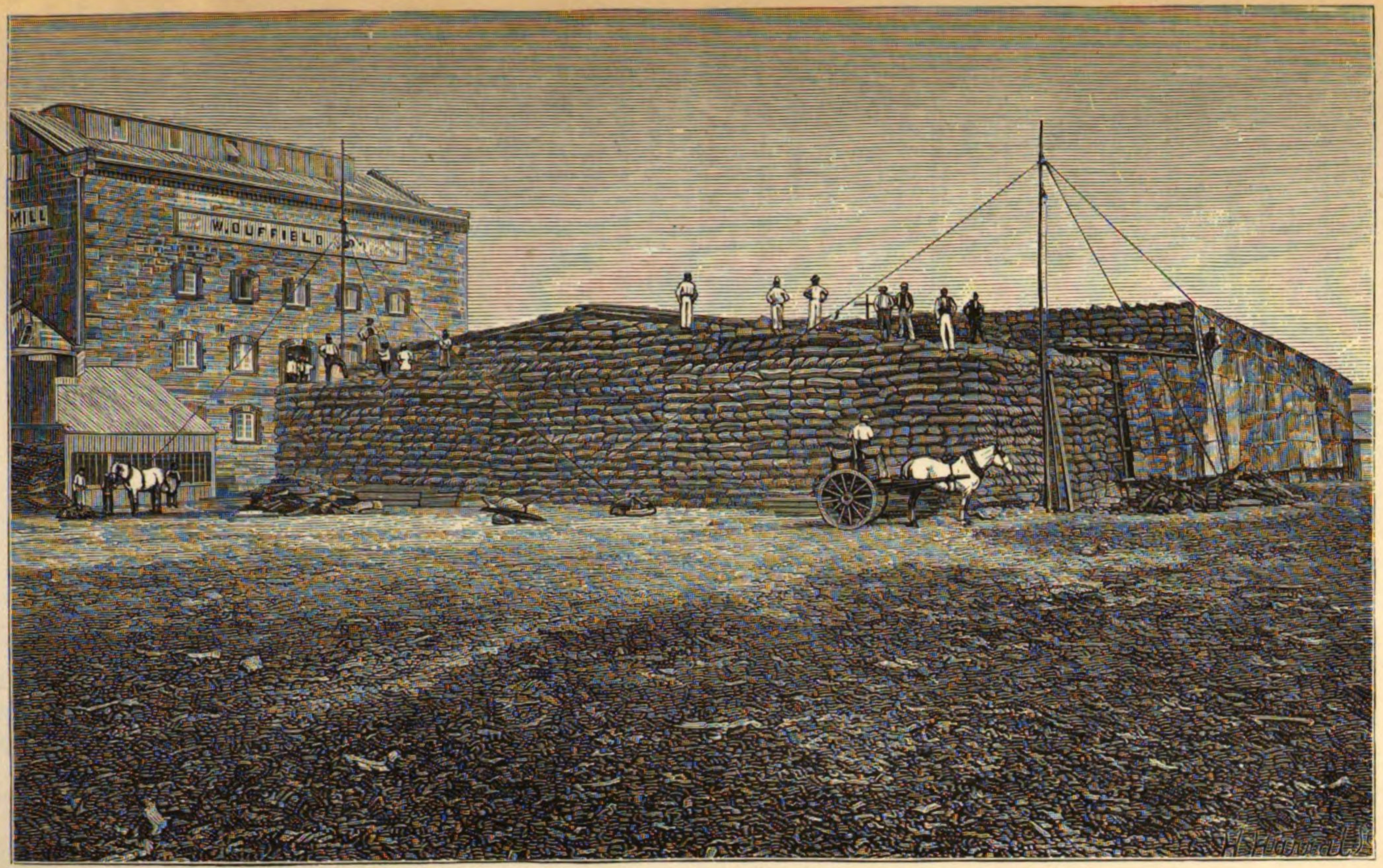
STAPLE PRODUCE EXPORTS.

Years.	Total.	Breadstuffs.	Wool.	Minerals.
	£	£	£	£
1851	540,962	73,359	148,036	310,916
1856	1,398,867	556,371	412,163	408,042
1861	1,838,639	712,789	623,007	452,172
1866	2,539,723	645,401	990,173	824,501
1871	3,289,861	1,253,429	1,170,885	648,569
1875	4,442,100	1,680,996	1,833,519	762,386

From the foregoing statement, it appears that out of £4,442,100 worth of staple produce, the value of breadstuffs amounted to £1,680,996, or thirty-six per cent. of the whole; that wool represented £1,833,519, or forty-two per cent.; and copper £762,386, or twenty-eight per cent.; the balance of £165,199, or four per cent., being miscellaneous products.

BREADSTUFFS.—The exports of wheat, flour, and other breadstuffs, consfitute thirty-six per cent. of the total exports of South Australian produce, and have increased from a total value of £73,000 in 1851 to £1,680,000 in 1875. The exports of breadstuffs during the last twelve months were as follows:—Flour, 76,209 tons, value £819,395; wheat, 479,882 quarters, value £831,266; and bran and pollard, 5,512 tons, valued at £27,888, or together a total of £1,678,549 sterling.

The following table exhibits the remarkable development of this the most important branch of local industry. Giving the quantities exported will prove more useful than a statement merely showing the value, and furnish a more correct basis upon which to estimate the extent of substantial progress made by the agriculturists during the past decade:—



VICTORIA MILL, GAWLER. (*The Stack contains* 200,000 *Bushels of Wheat.*)

Years.	Flour.		Bran and Pollard.		Wheat.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons.	£	Tons.	£	Qrs.	£
1866	30,496	498,924	2,500	18,517	46,756	126,601
1867	43,703	498,222	3,274	14,549	301,543	521,690
1868	23,591	405,982	1,787	10,841	55,876	148,603
1869	38,653	495,589	2,847	15,303	195,031	371,221
1870	27,371	354,012	2,167	12,210	47,079	99,600
1871	46,842	594,482	3,816	14,495	315,054	639,348
1872	38,319	510,826	2,220	9,525	157,678	333,890
1873	57,170	737,160	1,477	7,906	479,702	965,577
1874	58,635	783,489	2,461	15,563	192,308	428,753
1875	76,209	819,395	5,512	27,888	479,882	831,266

The total exports of colonial produce in breadstuffs and grain during the period referred to was—of flour, 440,989 tons, of the value of £5,698,081; of wheat, 2,270,909 quarters, of the value of £4,466,549; and of bran and pollard, 28,121 tons, of the value of £146,797. Diagram C (page 372) shows the prices of wheat at Port Adelaide in each month during the past ten years.

The quality of South Australian wheat and flour is of such excellence as to command the highest price in the markets of the world. The great bulk of the crop is shipped to the United Kingdom, the daily fluctuations in whose markets are made known here by telegram. New South Wales, Queensland, Cape Town, Mauritius, New Caledonia, and several Eastern ports also receive considerable consignments of South Australian flour.

The harvest of 1875–6—now in course of being garnered—is expected to yield 230,000 tons of breadstuffs beyond local requirements for food and seed; or an excess, available for export, of the value of two and a quarter millions sterling.

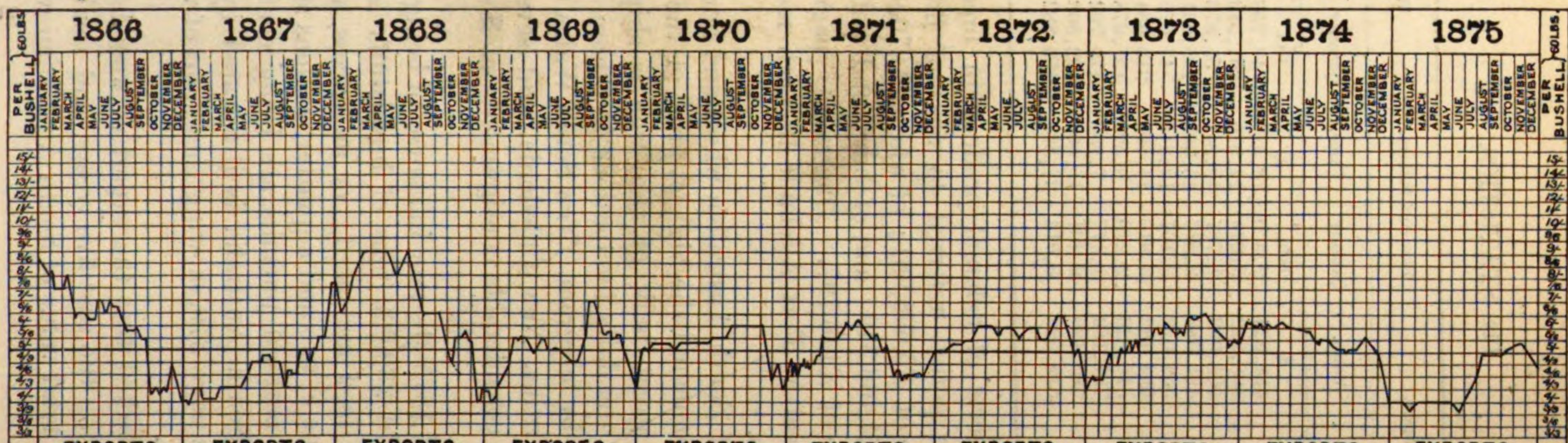
Wool.—That pastoral pursuits are being conducted with great success in South Australia is illustrated by the statement furnished on page 370, showing the export of wool during the last ten years.

It will be remarked that the export of wool has increased fifty per cent. during the past five years, and doubled during the decade. The total value of South Australian wool shipped

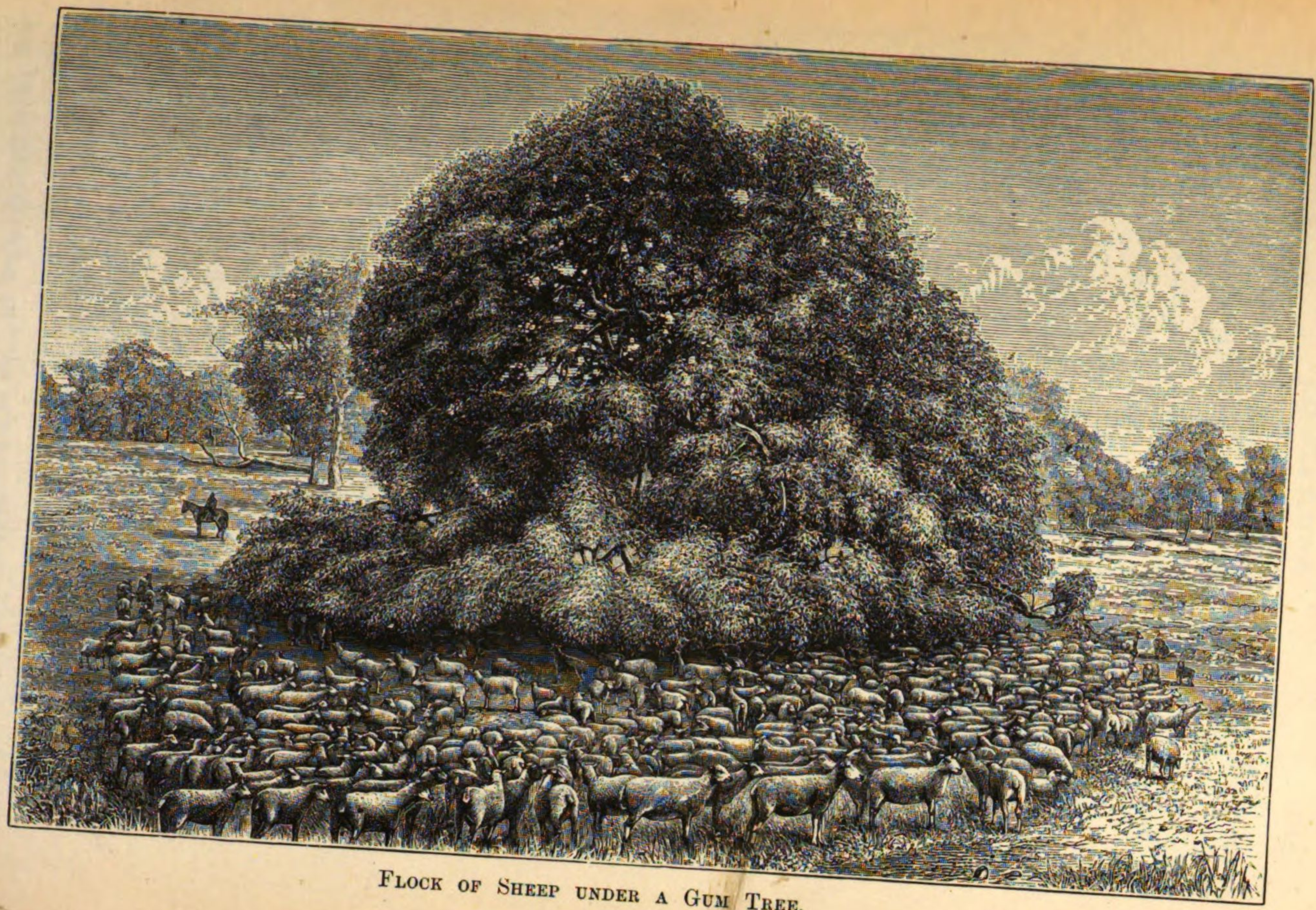
C.

SOUTH AUSTRALIA.

DIAGRAM SHOWING WHEAT PRICES AT PORT ADELAIDE FOR TEN YEARS.



	1866	1867	1868	1869	1870	1871	1872	1873	1874	1875
	— EXPORTS —	— EXPORTS —	— EXPORTS —	— EXPORTS —	— EXPORTS —	— EXPORTS —	— EXPORTS —	— EXPORTS —	— EXPORTS —	— EXPORTS —
	WHEAT – 8,312	WHEAT – 53,607	WHEAT – 9,933	WHEAT – 34,672	WHEAT – 8,370	WHEAT – 56,670	WHEAT – 26,629	WHEAT – 58,114	WHEAT – 42,353	WHEAT – 95,982
	FLOUR – 30,496	FLOUR – 43,703	FLOUR – 23,591	FLOUR – 38,653	FLOUR – 27,370	FLOUR – 46,760	FLOUR – 34,738	FLOUR – 103,543	FLOUR – 58,000	FLOUR – 76,209
	TONS 38,808	TONS 97,310	TONS 33,524	TONS 73,325	TONS 35,740	TONS 103,430	TONS 61,367	TONS 161,657	TONS 100,353	TONS 172,191



FLOCK OF SHEEP UNDER A GUM TREE.

in 1856 was £412,163; in 1866, £990,173; and in 1875 it reached £1,833,519 sterling.

Years.	S. A. Wool.	Other Wool.	No. of Bales.	Total Weight.	Total Value.
	Lbs.	Lbs.		Lbs.	£
1866	19,739,523	1,168,562	61,977	20,908,085	1,064,486
1867	19,350,195	3,283,597	66,395	22,633,792	1,144,341
1868	28,899,190	730,335	86,913	29,629,525	1,346,323
1869	27,022,671	3,510,141	87,150	30,522,812	1,128,568
1870	24,169,256	2,049,028	87,394	26,218,284	1,000,344
1871	31,2 0,677	1,405,750	97,532	32,656,427	1,350,689
1872	33,709,717	940,914	100,017	34,650,631	1,692,609
1873	32,967,941	3,005,493	105,306	35,973,434	1,808,622
1874	35,593,805	4,250,219	114,845	39,844,024	1,998,939
1875	39,723,249	4,785,425	126,046	44,508,674	2,066,227

The aggregate number of bales shipped last year was 126,046, as against 87,394 in 1870, and 61,977 in 1866.

Considering the vast extent of available territory at present unoccupied in South Australia, there would appear to be little doubt that the extraordinary progress already made in the production of wool will steadily continue. The excellent quality of the staple, the great suitability of the climate, giving almost complete immunity from scab, fluke, and other diseases peculiar to sheep, taken together with the security of tenure enjoyed by the pastoral lessees, conduce to the rapid development of this profitable industry.

COPPER.—South Australia owes no little of its prosperity to the employment of a large number of its people, directly and indirectly, in the working of her copper mines, several of which, whilst supporting a very considerable section of the colonists, have been exceedingly profitable to the proprietors. The principal mines are the Burra, the Wallaroo, and the Moonta. From the first of these, 215,000 tons of ore were raised during 31 years from the commencement of operations, producing four millions sterling. The total amount expended by the company was £1,982,000, of which £1,568,000 represented wages, the gross profits being £882,000. Since the opening of the Wallaroo Mines, the total quantity of ore raised therefrom has been 290,000 tons, and the average of the past five years has

been 26,000 tons. The Moonta mines were discovered in 1861, since which year 255,000 tons of ore have been raised, realizing £2,760,000. A profit of £928,000 has been divided amongst the shareholders of this magnificent property.

In 1844, shortly after the discovery of copper in South Australia, the total value of the minerals exported was £6436; in 1851 it reached to £310,916; in 1861 it amounted to £454,172; in 1871, to £648,569; and in 1875, to £762,386.

The following table exhibits the steady productiveness of South Australian mines, distinguishes the quantity of fine copper shipped from the quantity of ore exported in its crude state, and gives the estimated value of each.

Years.	Fine Copper.		Copper Ore.		Total Value, all Minerals.
	Cwt.	£	Tons.	£	£
1866	129,272	584,503	16,824	225,683	824,501
1867	156,863	627,384	11,430	113,409	753,413
1868	104,227	400,691	20,725	207,519	624,022
1869	92,788	371,566	26,835	250,259	627,152
1870	109,421	394,919	20,886	173,861	574,090
1871	127,911	518,080	20,127	119,903	648,569
1872	149,050	680,714	26,964	122,020	806,364
1873	141,744	635,131	27,382	133,371	770,590
1874	132,587	557,306	22,854	136,530	700,323
1875	136,835	578,065	26,436	175,101	762,336

The smelting works in connection with these mines are of a very extensive and costly character, employing a large amount of skilled labour.

Miscellaneous Products.—In addition to the chief staples above referred to, a variety of minor articles of produce are annually exported, last year amounting in the aggregate to the value of £174,634, including the following principal items, viz.:—Tallow, 25,670 cwt., £38,511 value; Preserved Meats, 1,259,820 lbs., £28,241; Leather, £4410; Hides and Skins, £16,139; Wine, 59,174 gallons, £19,240; Bark, 2650 tons, £14,552; Eggs, £7987; Dried and Fresh Fruits, £4977; Jams and Preserves, £3216; Potatoes, 735 tons, £3178; Soap, 1533 cwt., £1804; Salt, 80 tons; Gum, £1251; Slate, £1253; and other articles of less value.

SHIPPING.

The rapid growth of the external commerce of South Australia necessitates the employment of a largely increased amount of shipping, as will be seen from the following returns. No less than 844 vessels entered inwards in 1875, of a total capacity of 316,823 tons, and with crews numbering 15,644 men; giving a daily average of 1000 tons register for every working-day throughout the year. Of 95 vessels, having an aggregate carrying capacity of 50,000 tons, lately in Port Adelaide on one day, were the following:—Steamers—one of 1300 tons, three between 400 and 550 tons, and three under 250 tons; ships and barques—one of 2128 tons, one of 1777 tons, six of 1000 to 1500 tons, nineteen between 500 and 1000 tons, and twenty-five between 200 and 500 tons—besides eight brigs, twelve schooners, and sixteen coasters. The subjoined abstracts relate only to vessels arriving at or departing from South Australian ports from or to other countries, and is exclusive of a large number of steam and sailing vessels employed solely in the coasting trade of the Colony.

The following figures represent the aggregate number of vessels inwards and outwards, and the total registered tonnage in the years specified:—

Years.	Number of Vessels.	Tonnage.
1851	538	155,002
1856	867	230,390
1861	788	199,331
1866	1,039	339,871
1871	1,238	373,624
1875	1,634	611,381

It will be noted that the increase in the shipping during the last five years has amounted to no less than seventy per cent. In addition to the chief port of the Colony (Port Adelaide), at which two-thirds of the foreign shipping trade is carried on, there are many outports from which there is a direct export trade with other countries. It has been elsewhere mentioned that the configuration of the coast-line, and the numerous shipping ports, enable vessels of considerable tonnage to be

laden with wheat, wool, and other produce of the adjacent districts within a short distance of the place of production. The following table shows the shipping business done at each of these ports :—

Names of Ports.	Vessels.			Tonnage.			Crew.		
	Inwards.	Outwards.	Total.	Inwards.	Outwards.	Total.	Inwards.	Outwards.	Total.
Port Adelaide ...	489	418	907	205,998	169,206	375,204	7,550	6,446	13,996
Port Augusta ...	1	8	9	92	5,790	5,882	6	151	157
Port Broughton	2	4	6	1,935	2,658	4,593	39	58	97
Port Caroline ...	31	31	62	8,553	8,863	17,416	689	701	1,390
Port Glenelg ...	26	26	52	28,821	29,680	58,501	3,498	3,645	7,143
Port MacDonnell	69	71	140	15,515	15,511	31,062	1,256	1,257	2,513
Port Moonta ...	1	1	2	65	44	109	4	4	8
Murray River...	98	86	184	6,425	5,786	12,211	593	516	1,109
Port Noarlunga	—	2	2	—	373	373	—	17	17
Port Pirie ...	14	23	37	5,776	10,934	16,710	146	280	426
Port Robe ...	26	26	52	8,654	6,854	15,508	612	612	1,224
Port Victor ...	14	10	24	4,802	4,619	9,421	377	214	591
Port Wakefield	7	12	19	3,810	6,221	10,031	100	165	265
Port Wallaroo ...	64	65	129	26,003	26,920	52,923	760	757	1,517
Port Willunga	1	6	7	167	892	1,059	7	39	46
Port Yankalilla	1	1	2	207	207	414	7	7	14
Totals	844	790	1,634	316,823	294,558	611,381	15,644	14,869	30,513

The above return includes the number of steamers arriving at and departing from ports on the River Murray, the arrivals numbering eighty-six, and the departures ninety-eight, during the year.

THE RIVER MURRAY TRADE.

South Australian enterprise opened the River Murray to navigation in 1853, as well as, at a later period, its great tributaries, the Darling and the Murrumbidgee. Since the opening of these rivers the whole of that immense tract of pastoral country known as Riverina has been heavily stocked, producing now about two hundred thousand bales of wool annually. The Murray is navigable for a distance of 2000 miles from its mouth at Goolwa. The Darling, from its junction at Wentworth, is navigable to Fort Bourke, 800 miles, and for a short period some 300 miles further into Queensland. The Murrumbidgee, entering the Murray some 300 miles from Wentworth, is navigable to Wagga, a distance of 700 miles, to which town railway communication with Sydney



GUMERACHA BRIDGE.

will shortly be extended. Forty steamers and fifty barges are occupied in the trade. At present, the larger portion of the upper river traffic is diverted up-stream to Echuca, and thence by railway to Melbourne, owing to special inducements held out by the Victorian Government, who convey wool over that line at less than cost. As, however, the natural advantages of down-stream navigation are so great, saving £2 or £3 per ton in freight, as compared with the railway route, there is little doubt that the bulk of the carrying trade will eventually revert to South Australia. Surveys are being made, and proceedings taken for opening the Murray Mouth to large vessels, alongside which the river boats will then discharge.

RAILWAYS.

Including those just approaching completion, there are three hundred and seventy-one miles of railway in South Australia, three hundred miles of which are worked by locomotives. The following table shows the length of the several lines and their termini :—

	Locomotive.	Horse traction.
GOVERNMENT LINES—		
Adelaide and Port Adelaide, including wharf lines	9½	—
Adelaide, Gawler, Kapunda, and Burra	124	—
Strathalbyn, Goolwa, and Port Victor	—	32
Port Wakefield and Blyth's Plains	42	—
Port Wakefield and Wallaroo	34½	—
Port Pirie and Gladstone	32	—
Port Broughton	—	14
Lacepede Bay and Naracoorte	51	—
Total	293	46
PRIVATE COMPANIES' LINES—		
Adelaide and Glenelg	7	—
Kadina, Wallaroo, and Moonta	—	25
Grand Total	300	71

The cost of construction of the lines at present in working has been £1,155,267. They are single lines, of five-foot three-inch gauge. Sixty miles are laid with rails sixty-five pounds to the yard, and the remainder with rails of forty pounds to

the yard. In addition, the cost of rolling stock and other plant amounted to £221,918, making a total of £1,337,185. The cost of construction, exclusive of rolling stock, was, for the Adelaide and Port Railway, £17,433 per mile; for the Kapunda Railway, £11,191; and for the extension to the Burra, £5072. The rolling stock on the Government lines consists of the following:—Twenty-nine locomotives, fifty-one passenger carriages, and six hundred and thirty-three goods waggons of all descriptions.

The estimated cost of the one hundred and forty-six miles approaching completion is £667,000—the average cost being £4600 per mile.

Up to the close of 1874, the total receipts amounted to £1,772,376; the working expenses to £1,066,937, reconstruction to £104,147, and maintenance to £420,500, leaving a balance of £180,789 to profit.

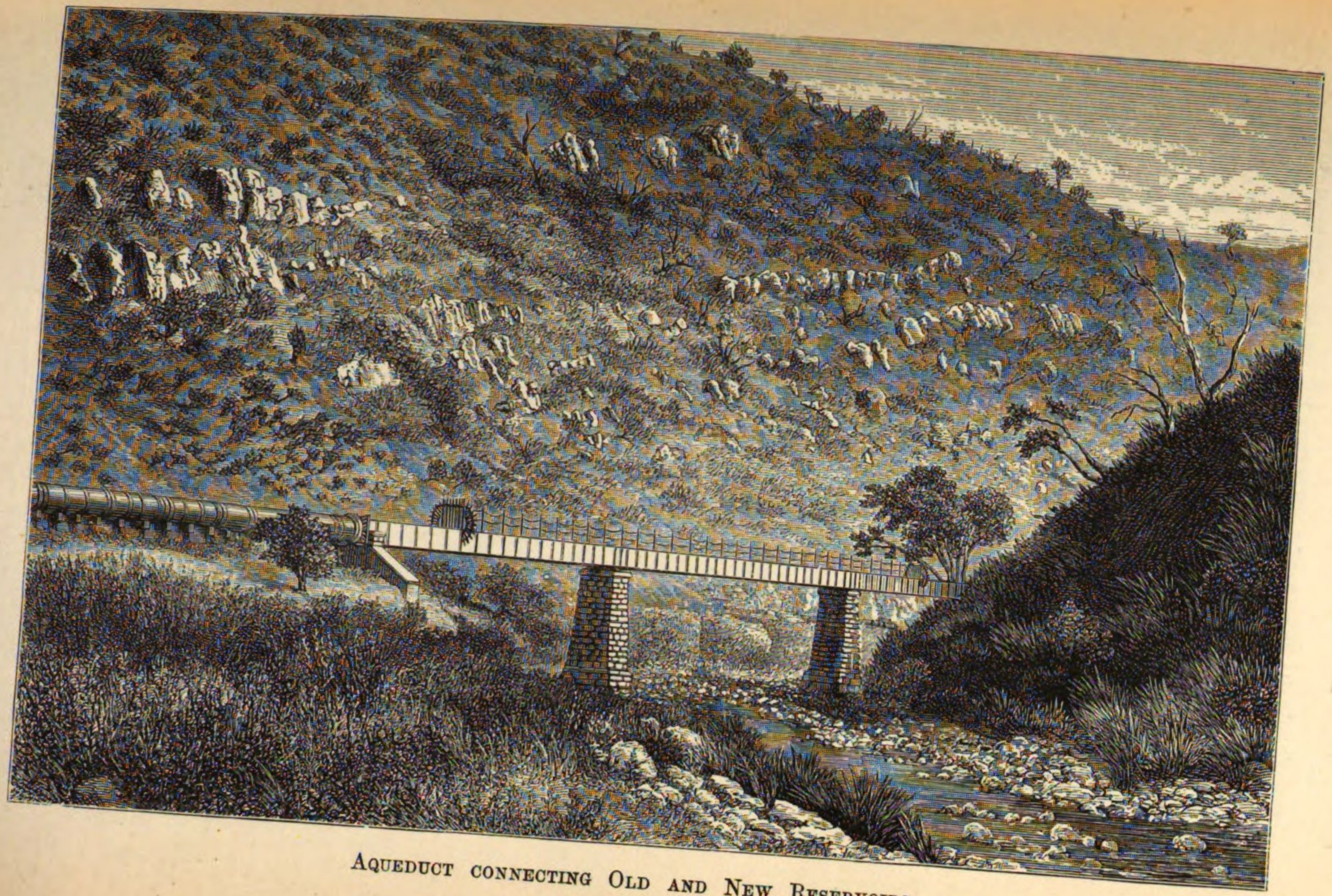
The receipts for the year 1874 amounted to £132,806, and the expenditure to £124,610, showing a balance of £8196 towards meeting interest on cost of construction.

The following statement shows the amount of goods and passenger traffic, and the total receipts at intervals of five years:—

Years.	Miles open.	Passenger Traffic.	Goods Traffic.	Total Receipts.
		No.	Tons.	£
1856	7½	241,886	26,354	19,498
1861	58	306,140	138,663	90,489
1866	58	405,502	161,671	114,131
1871	133	384,389	211,683	110,963
1875	133	386,117	301,530	166,710

The mileage run by trains in 1866 was 128,957; in 1871, 275,131; and it increased to 386,117 in 1875.

The two lines worked by horse traction are, together, forty-six miles in length; the train mileage run was 135,316, the total receipts £9387, and the working expenses £9037; the number of passengers carried was 31,895, and of goods 30,370 tons. The rolling stock consists of fourteen passenger carriages, and 185 goods trucks, and fifty-six horses are employed.



AQUEDUCT CONNECTING OLD AND NEW RESERVOIRS.

The average charge for carrying passengers on the Government railways ranges from 1*d.* to 1½*d.* per mile, and the charge for carrying a ton of goods one mile is 2¼*d.* to 2¾*d.* A bushel of wheat is carried from the Burra to Port Adelaide, a distance of one hundred miles, for 7*d.*—before the construction of the railway it cost double. A ton of ore is now brought from the Burra Mines to Port Adelaide for 21*s.*, whereas, prior to the opening of the line, it cost 35*s.* to 40*s.* to convey it to a port of shipment.

The policy pursued has been to reduce the cost of carriage to a minimum, with a view of developing the resources of the agricultural and mining districts through which the lines of railway pass. Without railway communication the limit within which wheat could be profitably grown would have been reached many years ago, and the quantities now produced could not be brought to a place of shipment except by steam power. As much as twelve hundred tons of wheat has sometimes to be brought down in a day. Although the railways only yield a return but little in excess of the cost of working, and maintaining them in good order, the facilities and cheapness of transit more than counterbalance the burthen of interest which falls upon the general public, who benefit in a direct ratio by the prosperity of the producing interests. Frequent communication between distant places situated on the lines of railway is secured to an extent which a private company having to realize dividends could not possibly afford.

Two railways have been constructed by private companies —one is a line connecting Adelaide with Glenelg, a populous watering-place, at which the ocean mail steamers call on their arrival from and departure for Suez. This line, under seven miles in length (single line, 5-foot 3-inch gauge), cost in construction £15,875, or about £2200 a mile. The great passenger traffic and frequency of communication necessitate the use of a large proportion of rolling stock as compared with the length of the line. It consists of four locomotives and eighteen passenger carriages. The total cost, including rolling stock, amounted to £53,432. The traffic receipts since the line was opened in August 1873 have amounted to

£25,911, and the working expenses, including maintenance, to £13,870, showing a balance of £12,041 to profit of the undertaking. The working expenses amounted to fifty-three per cent. of the receipts.

The other private line connects the Wallaroo and Moonta Mines with the sea-board at Port Wallaroo. It is twenty-five miles long, and is worked by horse traction. The original capital was £60,000, on which twenty per cent. has been divided during each of the past ten years. The present value of the property is £90,000, the difference having accrued from profits expended in improving and extending the works, which include jetty accommodation.

ROADS.

Large sums of money have been expended on the construction and maintenance of main trunk lines of road in the settled districts, through which there are 2700 miles defined. During the past twenty years, about £1,750,000 have been devoted to these works, and, with the exception of £200,000, the whole cost has been defrayed from the general revenue, no special toll or rate having been levied. The aggregate number of miles macadamised is 884, which are maintained in good order. In addition to the main lines, perhaps as many more miles of district or by-roads have been constructed and kept in repair by local municipalities. For this purpose funds are raised by a rate on landed property, supplemented by grants-in-aid from the general revenue. Fifty miles of metalled streets have already been formed in the City of Adelaide alone. The average cost of construction and metalling main roads is estimated to be £1000 per mile, and of maintaining them in repair £60 to £100 per mile annually.

WATERWORKS.

Considerable attention has been paid to the subject of water supply, which was first undertaken as a public work in 1857. In addition to a high-pressure supply to the city and suburbs of Adelaide, water has been laid on to several other centres of population, among which are Port Adelaide, Glenelg, Port



Old Reservoir for Water Supply, Adelaide.

Augusta, Port Pirie, Port Elliot, Kadina, and Moonta. The River Torrens is the source of supply to the city and suburban townships Port Adelaide and Glenelg. The water is collected in a masonry dam, from which it passes by means of an aqueduct three and a quarter miles in length, into two reservoirs, the larger of which has a water area of 167 acres, with a storage capacity of 945 millions of gallons. The smaller reservoir has a water area of twenty-seven and a half acres, and contains 140 millions of gallons. The supply is conveyed to the city by an eighteen-inch main, five miles in length. The primary mains are from fifteen to twenty-one inches in diameter, of a total length of nine miles; the secondary mains are from ten to fifteen inches, and fourteen miles long; and the street mains are from three to ten inches, of a length of 134 miles. The furthest point of supply is sixteen miles distant from the reservoirs. From these sources over fifty thousand people are supplied. The highest water level of the reservoir is one hundred and seventy feet above the highest point in the city, and three hundred feet above the sea. Ample provision is made for the suppression of fire, hydrants being laid throughout every street and road, at intervals of about four chains apart.

The total amount of the loans raised for the construction of waterworks is £620,000. The receipts amounted to £14,651 in 1865; to £22,600 in 1871; and to £30,895 in 1875. The charges for water have been reduced from time to time, the rate for that supplied through meters being now eighteenpence per thousand gallons.

POSTAL COMMUNICATION.

Great attention has been devoted to the subject of postal communication. Considering the thinly peopled and extensive area of the outlying settled districts, more than ordinary facilities are afforded the public by frequent and rapid despatch of inland mails. A uniform rate of twopence per half-ounce is charged upon letters carried to places within the Province, and a like rate for letters posted to the sister Colonies of Australasia, whether by overland mail thrice a week, or by the regular

intercolonial steam communication by sea. No charge is made for the carriage of newspapers, either inland or to any part of the world, so far as the South Australian Post Office is concerned. Book packets and parcels are carried at a low rate, and the system is extensively used. The direct four-weekly mail communication with Europe and the East, under contract with the Peninsular and Oriental Steam Navigation Company, is performed on an average under forty days from London to Adelaide with great punctuality. The following table shows the rapid extension of postal communication, a sure criterion of progress:—

Years.	No. of Post Offices.	Miles travelled by Mails.	No. of		Income.
			Letters.	Newspapers.	
					£
1856	102	—	844,853	785,608	8,925
1866	226	809,160	2,703,105	1,968,120	27,987
1875	357	1,542,426	4,431,525	2,950,997	43,205

Taking the last ten years, it will be remarked that the number of Post Offices has increased from 226 to 357; of distance travelled by the mails, from 809,160 to 1,542,426 miles; of letters, from 2,703,105 to 4,431,525; and of newspapers, from 1,968,120 to 2,950,997. The income of the Department has been as follows:—In the year 1856, £8925; in 1866, £27,987; and in 1875, £43,205.

The Money Order system is in full operation in all the principal towns of the Colony, there being eighty-two offices in all. Money Orders are also issued and paid in connection with Great Britain and Ireland, Germany, Canada, and all the Australian Colonies. The system of Telegraphic Money Orders is also availed of to a large extent. The orders issued in 1874 numbered 18,879, of £61,190 value; and 13,072 were paid, amounting to £42,282.



General Post Office, Adelaide.

TELEGRAPHS.

The geographical position of South Australia being practically that of the most western of the group, the first port of arrival and the last of departure for mail communication with Great Britain and the East, necessitated early and earnest attention being devoted to the extension of the South Australian telegraphs, so as to afford instantaneous communication with Melbourne, Sydney, and Brisbane. After this work had been accomplished by the several Governments, the question of direct telegraphic communication with Europe naturally became one of great moment to South Australia, she having under her control that portion of the continent from south to north through which an overland line could best be carried. In order to accomplish this vast undertaking, from which such great results have flowed, and an immense area of territory opened up for settlement, South Australia, at her own risk and cost—which has amounted to over £370,000—determined to enter upon the work of erecting a line of telegraph some 2200 miles in length, across a continent which had only been traversed by an exploring party.

The first local line of thirty-six miles of telegraph was laid twenty years ago, and the receipts of the department were £366. In 1858 intercolonial communication was opened by the addition of 350 miles. In 1861 the total length of wire open was 914 miles, and the receipts were £7382. In 1872 the overland line to Port Darwin was completed, when cable communication was established with London. The completion of this work brought the length of wire up to 3731 miles, and the total receipts to £14,684. Every township and port of any importance is connected with the city by means of telegraph, the number of stations open being 105, between which telegrams are sent at a uniform rate of one shilling for ten words, which sum covers the transmission of a message over a distance of a thousand miles. There is a uniform charge of 10*s.* 6*d.* a word on messages sent between Adelaide and London. The traffic in 1875 over the transcontinental line in connection with the European cable amounted to £104,205,

the number of messages being 9709. To show the ramifications of the telegraph system in Australia, it is only needful to mention that the length of lines open or closely approaching completion is 28,285 miles; and the number of stations 547.

Colonies.	No. of Stations.	Miles of Wire.
South Australia ...	105	5,004
New South Wales ...	137	7,904
Victoria	163	4,613
Queensland	90	3,617
Tasmania	32	547
Western Australia ...	20	1,600

At the close of the year 1875 there were 3904 miles of wire open throughout the Colony, and there are 1100 miles now in course of construction. The 105 stations already erected employ 230 officers, operators, and messengers. The number of messages inland and intercolonial transmitted in the year was 315,342, and international 9709, making a total of 325,051. The revenue of the year was £33,616, of which amount £17,083 was derived from inland messages, £4762 from intercolonial and £11,771 from international messages. The following table shows the operations of the South Australian Telegraph Department from the commencement :—

Years.	No. of Stations.	Miles of Wire Open.	No. of Messages.	Receipts.
				£
1856	7	36	14,738	366
1861	27	914	76,709	7,382
1865	45	1,173	112,344	11,735
1872	86	3,731	170,902	14,684
1875	105	3,904	325,051	33,616

There is a through communication with all the sister Colonies, Victoria, New South Wales, Tasmania, and Queensland. The connection of Western Australia with the telegraphic circle is rapidly being accomplished, when the continent of Australia will be traversed by wire from north to south and

from east to west. A cable is now being laid to connect New Zealand, thereby completing the chain which will unite the whole of the British possessions at the Antipodes with the Mother Country and the rest of the civilized world.

Daily weather and shipping reports are interchanged between the several ports and principal towns throughout the whole continent.

RATES OF WAGES.

The following compilation, by Mr. J. Kemp Penny, Labour Agent, is taken from the *South Australian Register* newspaper of 29th January 1876. It shows the rates of wages paid in Adelaide to skilled labourers and other tradesmen, the prices varying of course according to the proficiency or skill of the individual and the season of the year. Great care has been taken in every instance to procure authentic information:—

Bookbinders.—30*s.* to £3 per week; forwarders, 35*s.* to 45*s.*; finishers, 60*s.* to 70*s.*

Bootmakers.—At the principal factories piecework is the rule, but some men are employed on daywork, whose average earnings are 40*s.* to 45*s.* per week, while very expert hands earn over £3. Female machine hands receive weekly from 15*s.* to £1, while girls as tackers, &c. receive from half-a-crown to 15*s.* The present prices at piecework are as follows:—Men's Goods—Riveting wellingtons and riding boots, 2*s.*; half-wellingtons, 1*s.* 9*d.*; side-springs, 1*s.* 6*d.*; strong lace-up, 2*s.*; finishing wellingtons and riding boots, 2*s.*; half-wellingtons, 1*s.* 9*d.*; side-springs, 1*s.* 6*d.*; strong lace-up, 9*d.* Women's Goods—Riveting side-springs, plain, 1*s.* 2*d.*; plain leather boots, 1*s.*; slippers, 4*d.*; finishing side-springs, plain, 1*s.* 2*d.*; plain leather boots, 8*d.*; slippers, 3*d.* Girls (from 10 to 13), calf, riveting side-springs, plain, 9*d.*; finishing do., 8*d.*; good female fitters from 12*s.* to 14*s.*

Brass-founders.—9*s.* to 12*s.* per day.

Brewers.—30*s.* to 50*s.* per week.

Brickmakers.—13*s.* per 1000 on the back.

Builders.—In this trade firms have adopted the eight

hours' system. The prices ruling are—For stonemasons and wallers, 9*s.* to 10*s.* per day; stonecutters, 9*s.* to 9*s.* 6*d.*; plasterers, do.; bricklayers, do.; slaters, a shade higher; carpenters, 8*s.* to 9*s.*; labourers, 6*s.* to 7*s.*; pick and shovel men, do.

BAKERS.—Foremen are receiving from £1 15*s.* to £2 15*s.* per week, and second hands from 25*s.* to £2, with board and lodging; skilled confectioners proportionately higher.

BUTCHERS.—Engagements are made by the week. The present rates are—For shopmen, 35*s.* to 50*s.*; youths, 15*s.* to £1; slaughtermen, 30*s.* to £2; and small goods men, from 30*s.* to £2 5*s.*, with board.

BASKETMAKERS.—Piecework make wages from 50*s.* to £3 7*s.* per week, mostly canework.

CABINETMAKERS.—Engagements are chiefly made by piecework, but when by time the following are the customary rates per day of eight and a half hours:—First-class workmen, 9*s.* to 10*s.*; second do., 8*s.*; upholsterers, 8*s.* 6*d.* to 10*s.*; makers of deal tables, meat-safes, &c., from 7*s.* 6d. to 9*s.*

CARTERS.—25*s.* to 35*s.* per week.

COACHBUILDERS.—The wages per week vary according to the following scale:—Smiths, from £3 to £3 10*s.*; bodymakers, from £2 14*s.* to £3; wheelers, £2 10*s.* to £3; painters, £2 to £2 14*s.*; trimmers, do.; vicemen, £1 10*s.* to £2.

COOPERS.—Work is chiefly done by the piece; when otherwise, however, the day is understood to consist of eight hours, for which the remuneration varies from 8*s.* to 9*s.* In piecework 2*s.* is paid for a cask of three gallons, 2*s.* 6*d.* for five gallons, and 3*s.* 3*d.* for one of ten gallons.

COPPERSMITHS.—9*s.* to 12*s.* per day.

DRAPERS.—30*s.* to 70*s.* per week.

FARRIERS.—Firemen per day of ten hours, 10*s.*; floormen, from £2 5*s.* to £2 10*s.* per week.

GARDENING.—Gardeners, 6*s.* to 7*s.* per day; digging, 3*d.* (sandy soil) to 1*s.* per rod (ordinary garden soil); trenching, by contract; pruning, 2*s.* 6*d.* to 4*s.* per 100 vines, 6*s.* to 7*s.* daywork.

GASFITTERS.—In regular employment the wages vary from

£2 to £3 per week; when employed by the day, they receive from 8*s.* to 10*s.*

GALVANIZED TIN IRON WORKERS.—Daywork from 8*s.* to 10*s.*; week of 48 hours, £2 2*s.* to £2 14*s.*

GUNSMITHS.—9*s.* to 12*s.* per day.

IRON-WORKERS.—Boilermakers per day of eight hours get from 10*s.* to 11*s.*; smiths, do.; fitters and turners, do.; moulders, do.; labourers, from 6*s.* 6*d.* to 7*s.* 6*d.*

IRON TRADE.—General smiths, 9*s.* to 10*s.* per day; first-class smiths, 9*s.* per day; fitters, 9*s.* to 11*s.* per day; wheelwrights, 8*s.* to 11*s.* per day; moulders (first-class), 9*s.* per day; painters, 5*s.* per day; engine-drivers, 7*s.* to 10*s.* per day; sawyers, 7*s.* to 8*s.* per day; carpenters, 7*s.* to 11*s.* per day; turners, 7*s.* to 8*s.* per day; foundry hands, 6*s.* to 7*s.* per day; labourers, 6*s.* to 7*s.* per day.

JEWELLERS.—Ordinary workmen, £2 10*s.* to £4 10*s.* per week, and more skilled workmen, engravers, &c., £5 to £6.

MILLERS.—50*s.* to 60*s.*

PLUMBERS.—Very good hands obtain from 11*s.* to 12*s.* per day of eight hours; inferior workmen, £2 8*s.* per week.

PAINTERS AND GLAZIERS.—These tradesmen generally receive 8*s.* to 10*s.* per day of eight hours, or 1*s.* to 1*s.* 3*d.* per hour. Grainers and writers, 10*s.* per day, or 1*s.* 3*d.* per hour; very good writers and grainers, 11*s.* to 13*s.* per day.

PAPERHANGERS.—9*d.* to 1*s.* 6*d.* for 12 yards.

PRINTERS.—Compositors, newspaper, 1*s.* per 1000; jobbing hands, £2 15*s.* per week; pressmen £2 15*s.*

SADDLERS.—Most of the work done in this trade is by the piece, but when by time, the following are the rates:—First-class harness men from 8*s.* to 9*s.* per day of 10 hours summer, 9 hours winter; second class or jobbing, from 5*s.* to 7*s.* 6*d.*; first-class saddle hands, from 10*s.* to 12*s.*

SAILMAKERS.—1*s.* 2*d.* to 1*s.* 3*d.* per hour, eight hours per diem.

SEAMEN'S WAGES (Intercolonial) are steady at £5 per month.

STONEBREAKERS.—3*s.* per yard.

STOREMEN.—30*s.* to 50*s.* per week.

TINSMITHS.—11*d.* to 1*s.* 4*d.* per hour.

TAILORS.—Wages, 10*d.* per hour piecework, or 1*s.* per hour daywork. Good workmen are now earning from £4 to £5 per week. Females receive a corresponding increase.

TANNERS AND CURRIERS.—The working day is ten hours. Beamsmen in the lime yard get from £2 to £2 10*s.* per week; strikers and finishers from 36*s.* to 40*s.*; tanners from 36*s.* to 42*s.*; curriers' work is all done by the piece and on agreed conditions. First-rate workmen who have served their full apprenticeship term are earning from £3 10*s.* to £4 10*s.* per week.

WATCHMAKERS.—The wages given vary from £3 10*s.* to £4 per week.

WHEELWRIGHTS.—1*s.* to 1*s.* 3*d.* per hour.

FEMALE DOMESTICS.—Per week, with board and lodging—General servants, 8*s.* to 12*s.*; cooks, 10*s.* to 20*s.*; housemaids, 8*s.* to 12*s.*; kitchenmaids, 8*s.* to 10*s.*; housekeepers, 10*s.* to £1; laundresses, 10*s.* to 16*s.*; nursemaids, 8*s.* to 12*s.*; nursegirls, 4*s.* to 7*s.*; charwomen, 3*s.* to 4*s.* per diem.

SHEARERS.—Shearers, 20*s.* per 100; rollers, 15*s.*; pressers, 25*s.*; sewers, 20*s.*; dumpers, 20*s.*; pickers, 12*s.*; cooks, 40*s.*; butchers, 25*s.*; cooks' mates, 20*s.* per week.

STATION HANDS.—Drovers, £1 to £1 10*s.* per week, or 10*s.* 6*d.* per day and find themselves; boundary-riders, 17*s.* to 25*s.* per week; shepherds, 17*s.* to 20*s.* per week; married couples, per annum, £52 to £75; lambminders, 10*s.* to 15*s.* per week; bullock-drivers, 20*s.* to 25*s.* per week; knockabout hands, 17*s.* to 20*s.* per week; bush carpenters and blacksmiths, 30*s.* per week; cooks, 17*s.* to 25*s.* per week; water-drawers, 18*s.* to 20*s.* per week. All the above are with rations and expenses paid up to the station.

FARM HANDS.—Ploughmen, 20*s.* per week; general farm servants, 20*s.* to 30*s.* per week; married couples, females to cook, &c., 20*s.* to 30*s.* per week; harvesters, 25*s.* to 35*s.* per week; boys, from 10*s.* to 12*s.*; youngsters tailing cattle and sheep, 4*s.* to 8*s.* per week; teamsters, 20*s.* to 30*s.*; hay harvesters, 25*s.* to 35*s.*; all with board and lodging.

MISCELLANEOUS.—Fencers, post and 3-wire fence, £10 to

£20 per mile; do., per rod, three-rail, 2*s.* to 3*s.*; wire do., 4*s.* to 7*s.*; cabmen, 20*s.* to 30*s.* per week with board and lodging; busmen, 35*s.* to 40*s.* per week without board; labourers, 6*s.* to 8*s.* per diem without board and lodging; ostlers, 20*s.* to 25*s.* per week with board and lodging. Sawyers, logs at pit, 13*s.* per 100.

Average Wages of Miners.—Moonta District—Miners, per week, eight hours' shift, £2 2*s.*; breaksmen do., none employed; engineers, from £1 16*s.* to £2 15*s.*; tribute, £1 18*s.* to £2 5*s.*; on contract, from £1 16*s.* to £2; owners' account, 5*s.* 6*d.* per day.

Scale of Rations per Week—10 lbs. flour, 12 lbs. meat, 2 lbs. sugar, ¼ lb. tea.

PRICES OF PROVISIONS.

The following are the current quotations in Adelaide, as taken from the public prints, of live stock, farm and garden produce, provisions, groceries, &c.:—

Wholesale, Flour, Grain, &c.

	£	s.	d.		£	s.	d.
Flour, fine silk-dressed, per ton of 2000 lbs., at the Port, bags included	11	0	0	to	11	5	0
Ditto ditto, country brand	10	5	0	„	11	0	0
Wheat, per bushel of 60 lbs., large lots, at the Port (old)	0	5	0			—	
Ditto ditto (new)	0	4	8	„	0	4	9
Bran, per bushel of 20 lbs., at the Port, bags included	0	1	2	„	0	1	2½
Pollard, per bushel of 20 lbs.	0	0	11	„	0	1	0
Oats, per bushel of 40 lbs., without bags	0	4	0	„	0	4	6
Barley, per bushel of 50 lbs., without bags ...	0	5	6	„	0	6	0

Wholesale, Dairy and Farm Produce.

Bacon	per lb.	0	0	10	—
Butter...	per lb.	0	0	10	—
Ditto (Potted)	per lb.	0	0	11	—
Cheese	per lb.	0	0	9	—
Eggs	per doz.	0	0	9½	—
Hams	per lb.	0	0	11	—
Lard	per lb.	0	0	9	—
Onions...	per. cwt.	0	11	0	—
Honey...	per lb.	0	0	3	—
Hay	per ton	3	10	0	—
Prairie grass	per bush.	0	8	0	—
Seed, Lucerne	per lb.	0	1	2	—
Peas	per bush.	0	3	6	—
Vetches	per bush.	0	8	0	—

Hides, Skins, Bones, &c.

		£	s.	d.		£	s.	d.
Hides, salted	per lb.	0	0	4½	to	0	0	5
Butchers' Green	each	1	5	0	„	2	10	0
Hoofs	per ton	1	10	0	„	2	10	0
Green Kangaroo Skins	per doz.	0	7	0	„	2	5	0
Skins, Calf	each	0	1	4	„	0	10	0
Ditto, Wallaby	per doz.	0	10	0	„	1	15	0
Shank Bones	per ton	5	0	0	„	10	0	0

Bark.

Bark, Wattle, ground	per ton	7	0	0		—
Ditto, ditto, chopped	per ton	5	10	0	to	6 0 0

Tallow.

Tallow, Beef, for Export	per ton	32	0	0		—
Ditto, Mutton, ditto	per ton	34	0	0		—

Wool.

Washed	per lb.	0	0	11	to	0	1	2
Greasy...	per lb.	0	0	7	„	0	0	8

Wine (Colonial).

Good sound Colonial Wine of last year's vintage, for large quantities in bulk	per gall.	0	1	6	to	0	4	0
Superior ditto	per gall.	0	5	0	„	0	10	0
Colonial Spirits, in bond	per gall.	0	3	6			—	

Leather.

Basils	per doz.	0	15	0	to	1	0	0
Colonial Calf...	per lb.	0	4	0	„	0	5	6
Ditto Kip	per lb.	0	2	3	„	0	2	6
Ditto Sole	per lb.	0	1	2	„	0	1	7
Ditto Kangaroo	per doz.	1	15	0	„	4	0	0
Ditto Wallaby	per lb.	0	12	0	„	0	14	0

Copper.

Wallaroo	per ton	82	0	0			—	
Burra	per ton	82	0	0			—	

Live Stock.

Horses, Draught	30	0	0	to	45	0	0
Ditto, Light	12	0	0	„	20	0	0
Bullocks, Fat...	10	0	0	„	15	0	0

Sheep, Fat Wethers, 12*s.* to 17*s.*, according to season.

Retail Farm and Dairy Produce.

Quotations:—Bread and Flour—Bread, 2½*d.* to 3½*d.* per 2-lb. loaf; do., aërated, 3*d.* 2-lb. loaf; flour, 1½*d.* to 2*d.* per lb. Butcher's meat—Beef, 4*d.* to 8*d.* per lb.; mutton, 2*d.* to 5*d.*; lamb, 2*s.* 6*d.* to 3*s.* 6*d.* per quarter; pork, 7*d.* to 8*d.*; veal, 5*d.* to 8*d.* Dairy produce—Bacon, 1*s.* to 1*s.* 2*d.* per lb.; butter, fresh, 1*s.* 2*d.*; do., salted, 1*s.* 2*d.*; cheese, 1*s.*; eggs, 1*s.* per dozen; fowls, 5*s.* per pair; ducks, 6*s.* to 6*s.* 6*d.* per pair; geese, 6*s.* each; hams, 1*s.* 2*d.* per lb.; honey, 5*d.* per lb.; lard, 1*s.* per lb.; milk, 4*d.* to 6*d.* per quart; pigeons, 1*s.* 3*d.* to 1*s.* 5*d.* per pair; rabbits, tame, 1*s.* each; wild do., 1*s.* per pair; turkeys, 6*s.* to 10*s.* each.

Groceries.

Tea, 2*s.* to 2*s.* 6*d.* per lb.; sugar, 3*d.* to 4½*d.* per lb.; coffee, 1*s.* 6*d.* per lb.; rice, 3*d.* to 5*d.* per lb.; salt, 1*d.* per lb.; tobacco, 4*s.* to 4*s.* 6*d.*; soap, 3*d.* to 4*d.* per lb.

Hay Market.

Best wheaten hay, £4 10*s.* per ton; good mixed do., £3 15*s.*

East-End Market.

Vegetables — Beans (broad), 2*s.* to 2*s.* 6*d.* per bushel; beans (French), 1*s.* 3*d.* to 2*s.* per dozen lbs.; beetroot, 1*s.* to 1*s.* 6*d.* per dozen; cabbages, 1*s.* 6*d.* to 4*s.* per dozen; do. (Savoys), 2*s.* to 3*s.* per dozen; capsicums, 1*s.* to 1*s.* 3*d.* per lb.; carrots, 1*s.* 6*d.* to 2*s.* per dozen bunches; cauliflowers, 3*s.* to 5*s.* per dozen; celery, 4*s.* to 6*s.* per dozen heads; chillies, 1*s.* to 1*s.* 3*d.* per lb.; horse-radish, 6*d.* to 10*d.* per lb.; garlic, 4*d.* to 6*d.* per lb.; lettuces, 6*d.* to 1*s.* 3*d.* per dozen; marjoram, 6*d.* to 8*d.* per dozen bunches; mint, 6*d.* per dozen bunches; onions, 6*s.* 6*d.* to 8*s.* 6*d.* per cwt.; parsnips, 1*s.* 6*d.* to 2*s.* 6*d.* per dozen bunches; peas, 3*s.* to 4*s.* per bushel; potatoes, 4*s.* 6*d.* to 5*s.* per cwt.; radishes, 6*d.* to 8*d.* per dozen bunches; do. (turnip), 6*d.* to 8*d.* per dozen bunches; rhubarb, 2*s.* to 3*s.* per dozen lbs.; sage, 6*d.* to 8*d.* per dozen bunches; shalots, 4*d.* to 6*d.* per lb.; thyme, 6*d.* to 8*d.* per dozen bunches; tomatoes, 1*s.* 6*d.* to 2*s.* per dozen lbs.; trombones, 4*s.* to 7*s.* per dozen; turnips, 1*s.* 6*d.* to 2*s.* per dozen bunches; vegetable marrows, 1*s.* 6*d.* to 3*s.* per dozen; watercress, 6*d.* to 8*d.* per dozen bunches; cucumbers, 6*d.* to 3*s.* per dozen. Fruit — Almonds (green), 2*d.* per lb.; do. (hard-shell), 2*d.* per lb.; do. (soft-shell), 6*d.* per lb.; do. (cracked), 8*d.* per lb.; apples, 1*s.* 6*d.* to 3*s.* 6*d.* per bushel; apricots, 20*s.* to 22*s.* per cwt.; do., 2*d.* to 6*d.* per dozen; Barcelona nuts, 7*s.* per dozen lbs.; citrons, 15*s.* per cwt.; damsons, 2*s.* 6*d.* to 3*s.* per bushel; figs, 2*d.* to 6*d.* per dozen; gooseberries (Cape), 9*d.* to 10*d.* per lb.; grapes, 1*s.* 6*d.* to 2*s.* per dozen lbs.; lemons, 9*d.* to 2*s.* per dozen; melons (water), 15*s.* to 18*s.* per cwt.; nectarines, 2*d.* to 3*d.* per dozen; oranges, 1*s.* to 2*s.* 6*d.* per dozen; peaches, 2*d.* to 6*d.* per dozen; pears, 2*s.* 6*d.* to 4*s.* per bushel; plums, 3*s.* to 4*s.* per bushel; strawberries, 6*d.* to 8*d.* per lb. Dairy produce — Bacon, 10*d.* per lb.; do. (green), 9*d.* per lb.; butter (fresh), 10*d.* to 1*s.* per lb.; cheese (English), 1*s.* 6*d.* to 1*s.* 8*d.* per lb.; do. (colonial), 7*d.* to 8*d.* per lb.; dairy pork, 8*d.* per lb.; ducks, 4*s.* to 4*s.* 6*d.* per pair; eggs, 11*d.* to 1*s.* per dozen; fowls, 3*s.* 6*d.* to 4*s.* per pair; geese, 4*s.* to 4*s.* 6*d.* each; ham, 1*s.* to 1*s.* 1*d.* per lb.; lard, 9*d.* per lb.; turkeys, 5*s.* to 9*s.* each. Miscellaneous — Beeswax, 10*d.* to 1*s.* 2*d.* per lb.; colonial wine, 2*s.* to 6*s.* per gallon; colonial jam, 5*d.* to 7*d.* per lb.; flowers, 2*d.* to 1*s.* per bunch; honey, 32*s.* to 34*s.* per cwt.; rabbits, 1*s.* to 1*s.* 6*d.* per pair; pigeons, 1*s.* 3*d.* to 1*s.* 6*d.* per pair.

The rent of a dwelling suitable for an artisan and his family in Adelaide or the immediate suburbs varies from six to fifteen shillings per week, but in the country towns the rate is less. Large numbers of artisans, however, reside in their own freehold cottages. The savings of a few years have in many instances sufficed to enable them to accomplish this. Land is cheap, and the necessary advances for the erection of dwellings are readily obtainable from the several Building Societies. Cottages, with fuel and water, are provided for ploughmen, shepherds, and other labourers employed on farms

or sheep-runs. The following are quoted rates for house rent and for board and lodging:—

HOUSE RENT.

Two rooms, 4*s.* to 6*s.*; three rooms, 6*s.* to 10*s.*; four rooms, 8*s.* to 15*s.*; six rooms, 12*s.* to 25*s.* free from taxes; single room, 2*s.* 6*d.*; ditto (furnished) 6*s.* to 9*s.* per week. Gas is 8*s.* to 12*s.* per 1000 cubic feet, and water laid on 1*s.* 6*d.* per 1000 gallons.

BOARD AND LODGING.

Per week at Bushmen's Club, 18*s.*; at private houses, for single young men, shopmen, &c., 15*s.* to 18*s.*; clerks, &c., 20*s.* to 30*s.*; single females, 10*s.* to 15*s.*; private lodgers at hotels, 20*s.* to 4*l.* 4*s.*

Wearing apparel is procurable at the under-mentioned prices:—

Working men's black cloth suits, 39*s.* to 90*s.*; every day wear, 29*s.* to 65*s.*; moleskin trousers, 6*s.* 6*d.* to 10*s.* 6*d.*; tweed suit, 29*s.* to 80*s.*; jacket, 13*s.* to 40*s.*; waistcoat, 5*s.* to 11*s.*; trousers, 8*s.* to 25*s.*; boys' clothes, 15*s.* to 40*s.* per suit.

METEOROLOGICAL.

The following tables give the mean monthly rainfall at Adelaide during the thirty-six years 1839–74, and the result of the Meteorological Observations made at the Observatory during the ten years 1865–74:—

Months.	Rainfall (36 Years, 1839–74).				Mean Evaporation, Five Years.
	Mean.	Mean No. of Wet Days.	Greatest.	Least.	
	Inches.				Inches.
January ...	0·722	4	4·000	0·000	10·641
February ...	0·670	3	3·100	0·000	8·802
March	0·881	5½	3·753	0·000	7·608
April	1·760	8½	6·780	0·250	4·474
May	2·814	13	6·340	0·690	2·902
June	2·915	14	7·800	1·138	1·795
July	2·801	16	5·380	0·726	1·959
August	2·621	16	6·240	0·675	2·667
September ...	2·071	13½	4·640	0·711	3·427
October	1·739	10	3·834	0·460	5·981
November ...	1·263	5	3·550	0·100	6·979
December ...	0·894	5½	3·977	0·105	9·420
	21·091	114	—	—	66·655

FOR THE TEN YEARS 1865–1874.

Months.	Barometer corrected and reduced to 32°.			Temperature.								Solar Radiation.		Terrestrial Radiation.	
				Dry Bulb.							Wet Bulb.				
	Mean, 9 A.M.	Highest.	Lowest.	Mean.	Maximum.	Minimum.	Mean Highest during the Day.	Mean Lowest during Night.	Mean Diurnal Range.	Average No. of Days Temp. exceeded 90°.	Mean Temperature of Evaporation.	Mean Highest in Sun.	Actual Highest in Sun.	Mean Lowest on Wool.	Actual Lowest on Wool.
January ...	29·813	30·152	29·245	73·7	113·5	47·1	86·4	61·0	25·4	10	61·6	135·2	164·0	53·9	38·5
February...	29·860	30·250	29·347	73·8	110·0	47·5	86·3	61 4	24 9	10	61·8	134·1	158·3	53·6	37·5
March ...	29·979	30·301	29·430	70·1	107·8	46·5	81·8	58·5	23·3	7	59·4	130·1	155·2	51·5	36·5
April ...	30·010	30·366	29·404	64·6	98·0	41·9	74·5	54·8	19·7	1	56·7	120·7	146·3	47·3	32·5
May... ...	30·002	30·517	29·366	58·2	88·3	38·0	66·2	50·1	16·1	0	52·8	109·8	134·0	43·2	28·0
June ...	29·998	30·533	29·191	54·4	76·0	37·0	61·4	47·4	14·0	0	50·3	101·1	125·7	41·0	25·0
July... ...	30·020	30·503	29·168	51·5	72·5	34·2	58·8	44·1	14·7	0	47·8	103·6	121·4	38·0	24·6
August ...	29·995	30·492	29·110	53·7	80·0	34·1	62•3	45·2	17·1	0	49·3	111·1	130·5	38·2	26·4
September.	29·920	30·383	29·096	56·9	84·7	35·3	66·4	47·3	19·1	0	51·2	117·0	138·4	40·3	25·1
October ...	29·942	30·350	29·207	62·5	100·0	38·1	74·0	51·1	29·9	2	54·3	124·1	151·4	44·0	24·0
November..	29·880	30·304	29·223	66·5	113·5	40·9	78·7	54·3	24·4	4	57·0	121·9	160·5	47·2	29·2
December..	29·809	30·167	29·185	71·4	112·0	46·5	83·8	58·7	25·1	9	59·3	133·2	159·0	50·9	35·0
Year ...	29·936	30·533	29·096	63·1	113·5	34·2	73·4	52·8	20·6	43	55·1	120·8	164·0	45·8	24·6

From which the following hygrometric results are deduced:—

	Temperature of Dew Point. Degrees.	Elastic Force of Vapour. Inches.	Degree of Humidity. (Saturation = 100.)
January	52·8	0·400	48
February	53·0	0·405	48
March	51·1	0·377	51
April	50·2	0·363	60
May	47·9	0·335	67
June	46·3	0·313	74
July	44·0	0·289	77
August	45·0	0·298	73
September ...	46·0	0·310	66
October	47·3	0·326	57
November	49·3	0·352	54
December	50·1	0·362	47
Year	48·3	0·338	60

CONCLUSION.

The general statistical table, appended hereto, gives the principal items of information, illustrating the progress of South Australia from its foundation. In glancing at this retrospect, one cannot fail to recognize the great success that has attended the enterprise of a handful of Englishmen, who, without adventitious aid, have, during a single generation, established a flourishing community, reproducing most of the social and material advantages of the Mother Country, and much of old world civilization, conducive to the happiness and prosperity of a people. Fifty thousand men, supporting thrice their number of women and children, occupy two hundred thousand square miles of pastoral country, and possess six millions of sheep; own six million acres of land, and grow twelve million bushels of wheat; conduct an external commerce of nine millions sterling, and raise one million of revenue. Such is the material result shown in the thirty-ninth year of the colonization of South Australia.

STATISTICAL VIEW SHOWING THE PROGRESS OF THE PROVINCE OF SOUTH AUSTRALIA SINCE ITS FOUNDATION.

YEAR.	POPULATION.			BIRTHS.	DEATHS.	MARRIAGES.	IMMIGRATION.	EMIGRATION.	REVENUE.	EXPENDITURE.	LAND ALIENATED.		AGRICULTURE.				LIVE STOCK.			IMPORT AND EXPORT TRADE.			STAPLE PRODUCE EXPORTED.				SHIPPING, Inwards & Outwards.		RAINFALL.	YEAR.
	Persons.	Males.	Females.								Acres.	Amount.	Total under Cultivation.	Wheat.	Hay.	Other Crops.	Horses.	Cattle.	Sheep.	Total.	Imports.	Exports.	Total.	Breadstuffs.	Wool.	Minerals.	Number.	Tonnage.	Inches.	
									£	£		£	Acres.	Acres.	Acres.	Acres.				£	£	£	£	£	£	£				
1836	546	412	134	—	—	—	546	—	—	—	60,915	36,645	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9	2,592	—	1836
1837	—	—	—	—	—	—	—	—	—	5,283	3,711	6,714	8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1837
1838	6,000	—	—	83	67	75	—	—	1,448	16,580	48,040	48,040	86	20	—	—	480	2,500	28,000	165,024	158,582	6,442	5,040	—	770	—	—	—	—	1838
1839	—	—	—	—	—	—	477	—	19,826	96,186	170,841	170,841	443	120	—	—	800	7,600	108,700	362,688	346,649	16,039	9,165	—	350	—	—	—	19·84	1839
1840	14,600	—	—	355	320	186	2,992	—	30,618	171,430	15,565	15,565	2,503	1,059	—	—	1,060	15,100	200,160	335,436	303,357	32,079	15,650	—	8,740	—	425	83,787	24·23	1840
1841	—	—	—	—	—	—	776	—	23,329	89,999	7,651	7,651	6,722	4,154	—	—	890	—	—	392,995	288,348	104,647	40,561	—	35,485	—	197	37,036	17·96	1841
1842	—	—	—	377	143	76	—	—	23,404	68,434	17,081	17,081	19,790	13,892	—	—	1,560	26,000	300,000	225,597	147,349	75,248	29,079	—	22,036	—	150	25,354	20·32	1842
1843	17,366	9,526	7,670	934	158	140	1,213	1,477	24,953	34,386	1,887	1,902	28,690	23,000	—	—	1,576	29,000	331,000	189,935	109,137	80,858	66,160	—	45,568	127	104	15,533	17·19	1843
1844	19,000	10,734	8,266	671	140	110	1,114	436	26,899	29,362	5,022	5,666	26,918	18,980	—	—	—	22,711	355,689	214,187	118,915	95,272	82,268	—	42,769	6,436	139	18,489	16·88	1844
1845	21,759	12,388	9,371	708	238	141	2,336	449	32,433	40,775	49,658	52,902	26,218	18,838	—	—	—	26,146	480,669	333,278	184,819	148,459	131,800	—	72,235	19,020	225	26,558	18·83	1845
1846	25,893	14,711	11,182	937	360	220	4,458	863	47,286	38,690	59,402	98,594	33,292	26,134	—	—	2,000	56,986	681,374	643,937	330,099	312,838	287,059	—	106,510	143,231	278	49,509	26·89	1846
1847	31,153	17,531	13,622	994	495	346	5,645	885	66,342	58,879	35,003	36,336	36,440	25,920	—	—	—	56,375	784,811	761,173	410,825	350,348	275,115	—	56,130	174,017	301	62,641	27·61	1847
1848	38,666	24,527	17,139	1,293	509	311	7,664	1,042	82,911	80,129	29,200	32,935	48,911	29,737	—	—	—	55,083	838,394	888,394	384,326	504,068	465,878	—	98,582	320,624	412	90,956	19·74	1848
1849	52,904	29,361	23,543	1,605	834	255	16,166	2,694	108,301	82,637	56,611	58,196	44,983	35,185	—	—	—	53,661	884,078	1,002,371	599,548	402,853	373,842	—	108,539	219,775	549	155,920	25·44	1849
1850	63,700	35,963	27,737	2,174	986	233	10,358	4,221	238,983	239,081	64,949	90,386	64,728	41,807	13,302	9,619	6,488	60,034	984,190	1,416,389	845,572	570,817	545,040	38,312	131,731	365,464	559	174,455	19·51	1850
1851	66,538	37,321	29,217	2,759	973	189	8,464	6,025	222,559	183,506	82,590	88,740	—	—	—	—	—	—	—	1,292,864	690,777	602,087	540,962	73,359	148,036	310,916	538	155,002	30·63	1851
1852	68,663	36,310	32,353	2,727	1,098	726	20,789	16,475	243,174	140,048	86,672	99,081	—	—	—	—	—	—	—	2,586,552	798,811	1,787,741	736,899	212,566	115,877	374,778	739	202,507	27·34	1852
1853	8,944	43,400	35,544	2,774	1,275	1,020	20,128	11,648	339,754	239,784	213,321	291,660	—	—	—	—	—	—	—	4,578,104	2,336,290	2,241,814	731,595	257,144	236,020	176,744	869	260,917	27	1853
1854	92,545	50,517	42,028	3,451	1,346	1,002	17,258	5,467	595,356	422,409	213,325	383,470	129,692	89,945	23,402	16,345	10,184	74,220	1,768,724	3,469,929	2,147,107	1,322,822	694,422	316,217	182,419	94,831	947	290,534	15·35	1854
1855	96,982	48,640	48,342	3,944	1,663	953	17,211	4,501	453,641	689,696	171,610	233,745	—	—	—	—	—	—	—	2,359,153	1,370,938	988,215	686,953	236,400	283,479	155,357	711	225,923	23·15	1855
1856	104,708	53,086	51,622	4,488	1,147	1,172	9,525	7,278	479,978	579,927	187,451	235,460	203,423	162,011	22,516	18,896	22,260	272,746	1,962,460	3,032,269	1,366,529	1,665,740	1,398,867	556,371	412,163	408,042	867	230,390	24·02	1856
1857	109,917	55,735	54,182	5,183	1,304	1,218	8,138	4,909	455,211	538,213	177,600	212,365	235,965	175,864	37,958	22,143	26,220	310,400	2,075,805	3,581,594	1,623,022	1,958,572	1,744,184	755,840	504,520	488,839	970	282,368	21·16	1857
1858	118,340	60,209	58,131	5,672	1,859	1,173	7,855	3,609	469,637	528,773	158,015	197,820	264,462	188,703	45,919	29,840	34,629	—	—	3,281,536	1,769,351	1,512,185	1,355,041	525,398	420,833	373,282	741	192,391	21·52	1858
1859	122,735	62,328	60,407	5,738	1,923	1,045	4,869	3,651	511,927	620,757	188,065	211,574	361,884	218,216	55,210	88,458	40,471	—	—	3,163,370	1,507,494	1,655,876	1,502,165	554,265	484,977	411,018	792	216,128	14·85	1859
1860	124,112	62,630	61,482	5,568	2,336	1,031	4,374	4,902	438,827	492,656	129,262	149,755	428,816	273,672	55,818	99,326	49,399	278,265	2,824,811	3,423,307	1,639,591	1,783,716	1,576,326	499,102	573,368	446,537	662	209,036	19·67	1860
1861	126,830	65,048	61,782	5,551	1,962	1,158	3,127	2,077	558,587	482,951	147,354	183,353	486,667	310,636	62,874	113,157	52,597	265,434	3,038,356	4,008,329	1,976,018	2,032,311	1,838,639	712,789	623,007	452,172	788	199,331	25·19	1861
1862	135,329	69,608	65,721	6,075	1,918	1,189	3,239	2,685	548,769	579,381	129,910	148,695	494,511	320,160	73,747	100,604	56,251	258,342	3,431,000	3,966,452	1,820,656	2,145,796	1,920,487	633,241	635,270	547,619	766	216,521	22·84	1862
1863	140,416	72,109	68,307	5,966	2,221	1,152	4,234	2,892	631,700	635,205	159,791	181,084	555,968	335,758	75,590	144,620	59,008	226,166	3,891,642	4,387,096	2,028,279	2,358,817	2,095,356	747,116	715,935	542,393	886	255,493	22·92	1863
1864	147,341	75,888	71,453	6,208	2,565	1,291	5,958	2,676	775,838	626,688	224,171	265,441	587,775	390,836	66,570	130,369	62,899	204,892	4,106,230	5,718,476	2,412,931	3,305,545	3,015,537	1,464,593	775,656	691,624	1,236	321,388	19·45	1864
1865	156,605	80,686	75,919	6,672	2,174	1,436	8,469	3,703	1,089,129	790,504	316,477	510,268	660,569	410,608	101,996	147,965	73,993	158,057	3,779,308	6,057,442	2,927,596	3,129,846	2,754,657	1,228,480	821,482	620,112	1,220	357,290	14·75	1865
1866	163,452	85,334	78,118	6,782	2,753	1,299	6,955	4,135	949,774	1,064,323	214,429	322,429	739,714	457,628	111,339	170,747	70,829	123,820	3,911,610	5,693,879	2,835,142	2,858,737	2,539,723	645,401	990,173	824,501	1,039	339,871	19·94	1866
1867	172,860	89,991	82,869	7,041	2,939	1,379	3,651	4,046	716,295	1,003,272	144,020	163,787	810,734	550,456	97,432	162,846	74,228	122,200	4,477,445	5,671,016	2,506,304	3,164,622	2,776,095	1,037,085	919,532	755,413	1,136	343,819	19·33	1867
1868	176,298	91,347	84,951	7,247	2,516	1,286	2,900	4,193	716,004	852,689	199,693	224,458	808,234	533,035	106,644	168,555	75,409	123,213	4,987,024	5,057,810	2,238,510	2,819,300	2,603,826	568,491	1,305,280	624,022	903	277,872	17·88	1868
1869	181,146	93,860	87,286	6,976	2,211	1,211	2,807	2,724	777,351	802,252	223,050	*217,173	850,576	532,135	141,899	176,542	73,828	119,697	4,436,955	5,747,805	2,754,770	2,993,035	2,722,438	890,343	1,008,696	627,152	1,112	333,507	13·85	1869
1870	183,797	94,928	88,869	7,021	2,544	1,260	2,302	4,128	657,576	736,818	206,052	*235,010	959,006	604,761	140,316	213,929	83,744	136,832	4,400,655	4,449,281	2,029,793	2,419,488	2,123,297	470,828	902,753	574,090	916	287,989	24·1	1870
1871	185,626	95,408	90,218	7,082	2,378	1,250	2,532	3,182	778,094	759,478	424,138	*531,240	1,044,656	692,508	97,812	254,336	78,125	143,463	4,412,055	5,740,419	2,158,022	3,582,397	3,289,861	1,253,429	1,170,885	648,569	1,238	373,624	23·5	1871
1872	192,223	98,481	93,742	7,105	2,896	1,361	2,401	3,405	697,442	700,200	414,745	*524,691	1,164,846	759,811	115,704	289,331	82,215	151,662	4,900,687	6,540,194	2,801,571	3,738,623	3,524,087	860,202	1,647,387	806,364	1,033	347,360	23·17	1872
1873	198,075	101,540	96,535	7,107	2,631	1,562	4,548	3,172	972,814	839,153	357,594	*548,773	1,225,073	784,784	142,167	298,122	87,455	174,381	5,617,419	8,428,959	3,841,100	4,587,859	4,285,191	1,711,746	1,617,588	770,590	1,531	515,640	21·6	1873
1874	204,623	104,870	99,753	7,696	3,434	1,611	5,557	3,271	1,003,820	1,051,622	461,451	*741,982	1,330,484	839,638	160,931	329,915	93,122	185,342	6,120,211	8,386,145	3,983,290	4,402,855	3,868,275	1,230,331	1,762,987	700,323	1,440	534,550	19·14	1874
1875	210,442	107,944	102,498	7,408	4,136	1,663	6,593	4,049	1,143,312	1,176,412	686,050	*939,207	—	—	—	—	—	—	—	9,008,853	4,203,802	4,805,051	4,442,100	1,680,996	1,833,519	762,386	1,634	611,381	31·45	1875

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* Of which amounts £2,466,251 remains on credit.

☞ Total area of Province (exclusive of Northern Territory), 245,329,920 acres. Area alienated, 6,283,881 acres. Area still unalienated, estimated to be about 238,676,400 acres.

STATISTICAL VIEW SHOWING THE PROGRESS OF THE PROVINCE OF SOUTH AUSTRALIA SINCE ITS FOUNDATION (*continued*).

YEAR.	RAILWAYS.				MAIN ROADS.	PUBLIC DEBT.	POSTAL.				TELEGRAPHS.				BANKS.		SAVINGS BANKS.		MUNICIPALITIES AND DISTRICT COUNCILS.		CHURCHES AND CHAPELS.	PUBLIC SCHOOLS.		YEAR.
	Miles.	Passengers.	Goods.	Receipts.	Miles.		Letters.	Newspapers.	Post Offices.	Income.	Miles of Wire.	Telegrams.	Stations.	Receipts.	Assets.	Liabilities.	Depositors.	Total Funds.	Rateable Annual Value.	Receipts.		Number.	Scholars.	
		No.	Tons.	£		£	No.	No.	No.	£		No.	No.	£	£	£	No.	£	£	£				
1850	—	—	—	—	—	—	266,588	393,177	63	5,413	—	—	—	—	570,615	231,180	672	11,772	—	—	143	64	1,867	1850
1851	—	—	—	—	—	—	364,595	517,722	72	6,805	—	—	—	—	748,075	394,955	732	14,785	—	—	143	115	3,031	1851
1852	—	—	—	—	—	—	353,018	474,525	69	7,270	—	—	—	—	902,359	584,155	837	32,124	—	—	150	170	5,744	1852
1853	—	—	—	—	33	—	416,373	502,718	62	8,684	—	—	—	—	1,474,173	1,571,045	1,263	55,342	—	—	142	111	5,273	1853
1854	—	—	—	—	37	135,000	553,151	657,776	75	7,477	—	—	—	—	1,717,457	1,758,947	1,255	52,512	—	—	174	125	5,464	1854
1855	—	—	—	—	57	135,000	676,287	795,041	87	7,841	—	—	—	—	1,711,699	1,306,387	1,322	51,359	—	43,848	198	138	6,039	1855
1856	7	241,866	26,354	15,873	81	294,900	844,853	785,608	102	8,925	36	14,738	7	366	1,362,873	944,038	1,469	57,060	—	56,631	213	147	6,516	1856
1857	32	359,335	95,190	39,528	96	597,700	934,550	849,946	110	10,353	92	35,792	12	1,183	1,496,427	1,030,490	1,775	70,136	580,034	66,323	294	167	7,480	1857
1858	32	383,692	140,613	51,582	119	662,000	1,104,451	916,648	126	12,688	392	46,716	17	2,844	1,612,774	1,041,532	1,929	70,219	603,618	55,471	358	182	8,237	1858
1859	32	315,699	149,598	48,068	149	830,200	1,256,633	1,015,306	130	13,779	448	64,688	19	6,198	1,401,594	806,592	2,200	79,445	566,376	52,609	319	198	9,282	1859
1860	56	303,483	142,853	55,588	175	870,100	1,360,341	1,052,077	146	14,582	654	71,368	26	7,414	1,252,487	728,796	2,567	98,016	616,317	53,192	343	210	9,843	1860
1861	56	306,140	187,762	72,203	191	866,500	1,540,472	1,089,424	160	16,496	914	76,709	27	7,382	1,869,068	1,024,686	3,248	131,590	620,738	56,818	374	219	10,711	1861
1862	56	289,308	197,247	94,555	210	853,300	1,640,153	1,136,023	177	17,448	1,026	76,725	35	8,047	1,930,914	958,824	3,877	163,506	590,137	54,426	410	227	11,417	1862
1863	56	309,898	200,830	97,256	236	866,850	1,817,379	1,254,893	189	19,019	1,064	86,411	38	8,695	2,079,957	1,052,322	4,711	201,205	625,337	59,050	431	247	11,769	1863
1864	56	359,035	255,928	129,246	259	839,300	2,189,474	1,457,914	205	22,001	1,084	106,874	41	11,341	2,361,300	1,498,473	5,843	245,403	636,468	63,545	455	267	12,959	1864
1865	56	402,550	261,183	133,280	293	796,200	2,444,207	1,760,415	221	25,023	1,173	112,344	45	11,735	3,031,705	1,947,217	7,076	274,071	684,095	75,296	461	279	13,686	1865
1866	56	405,502	208,984	114,131	348	775,600	2,703,105	1,968,120	226	27,987	1,565	121,153	58	12,413	3,620,062	1,715,395	7,679	266,700	719,806	81,377	492	292	14,690	1866
1867	56	444,089	266,705	125,583	416	1,077,750	2,804,118	1,924,760	248	28,495	1,642	122,138	64	12,673	3,168,413	1,569,884	8,683	294,095	787,635	108,234	511	308	14,600	1867
1868	60	373,261	108,018	82,980	496	1,663,100	2,850,926	2,086,799	254	28,243	1,642	110,400	65	11,223	3,234,209	1,549,195	9,659	333,875	867,737	90,329	547	325	15,567	1868
1869	72	390,637	159,699	90,626	574	1,781,300	3,052,757	2,086,777	270	29,850	1,642	122,299	65	10,722	3,478,165	1,696,861	11,407	405,286	940,981	94,086	568	330	16,328	1869
1870	133	353,426	149,942	66,173	597	1,944,700	3,049,818	2,198,477	274	30,398	1,718	128,485	73	10,649	3,343,780	1,462,516	12,569	448,658	920,951	86,499	579	300	15,108	1870
1871	133	384,389	211,683	110,963	614	2,167,700	3,162,774	2,212,620	286	28,756	1,718	158,393	73	11,025	3,524,412	1,802,634	14,270	516,999	971,555	99,711	598	307	15,791	1871
1872	133	373,500	175,779	82,646	637	2,094,800	3,421,870	2,296,019	305	30,257	3,731	170,902	86	14,684	3,509,452	2,010,183	15,955	605,688	962,921	101,946	607	307	15,123	1872
1873	133	529,362	273,055	142,427	653	2,174,900	3,989,847	2,515,534	328	35,744	3,829	253,646	94	39,347	4,325,319	2,633,193	18,604	737,125	980,835	105,675	613	315	17,222	1873
1874	133	785,359	235,359	132,806	698	2,989,750	4,234,831	2,774,003	344	39,253	3,900	268,240	102	35,247	4,736,674	2,714,212	20,600	782,864	1,045,711	125,351	610	320	17,426	1874
1875	133	1,071,136	331,900	176,098	884	3,320,600	4,451,525	2,950,997	357	43,205	3,904	325,051	105	33,616	5,157,868	3,278,122	22,662	845,276	—	—	—	—	—	1875

SOUTH AUSTRALIA:

ITS OBSERVATORY AND METEOROLOGY.

By Charles Todd, C.M.G., F.R.A.S.,

POSTMASTER-GENERAL AND SUPERINTENDENT OF TELEGRAPHS, AND GOVERNMENT ASTRONOMER.

In a young Colony where a mere handful of people have had to bring vast wastes under cultivation, build new homes, construct roads and railways, and carry out other extensive public works necessary for the development of the country they have traversed the ocean to occupy, it is not to be expected that much time, thought, or money can be devoted to Science and Art. With so many pressing and more immediately important claims upon a limited revenue, little can be spared in the early days of a new settlement for the promotion of those higher purposes and objects which commend themselves to our intellect and attract our best sympathies. This is a penalty man has to pay when he leaves the crowded civilization of old countries to seek fresh and more ample fields where his enterprise and vigour will have freer scope. Colonists necessarily become great utilitarians, but to the credit of Australians an intelligent visitor to our shores will find that, whilst we have been vigorously employed in subduing nature till the wilderness blossoms as the rose, and have laid the foundations of a great and prosperous nation, the sacred cause of education has not been overlooked, nor have the advantages of mental culture ever been despised.

The Observatory, for the reasons just explained, is as yet but a very modest and unpretending institution, presided over by the Government Astronomer, who is also Postmaster-General and Superintendent of Telegraphs. It is situated on the West Park Lands, having the City of Adelaide and the

Mount Lofty Ranges on the east, and St. Vincent's Gulf, towards which the land gently slopes, at a distance of about four miles on the west. Until recently its operations were chiefly confined to meteorology, but advantage was taken of the transit of Venus, in December 1874, to procure a fine ten-foot equatorial, by Cooke & Son, of York.

The only other astronomical instrument is a forty-two-inch transit instrument, by Simms, kindly placed at our disposal by the Victorian Government, pending the erection of a transit circle which it is intended shortly to obtain.

The object-glass of the equatorial has an aperture of 8 inches, with a focus of 9 feet 11 inches, the telescope being carried by a massive iron pillar, standing on a pier of solid masonry having a broad foundation of concrete. The whole is enclosed in a dome eighteen feet in diameter, revolving on cannon balls. The pillar which carries the telescope consists of two parts, the upper part turning on the lower by means of a pinion working into teeth round the circumference of the lower pillar, so that the polar axis may be set to the meridian, or to any desired angle with the meridian. By means of a massive toothed iron semi-circle, into which works a large horizontal screw, the polar axis can be set parallel with the horizon, or brought within 25 or 30 degrees of the vertical; and is set to the meridian in the manner already described.

Clock-work motion is provided, and by a somewhat novel arrangement the clock can be made to drive the telescope in either direction. These three adjustments give the instrument an almost universal character, adapting it to either hemisphere.

The hour circle and the declination circle are read by verniers, the former to two seconds in time, and the latter to ten seconds in arc.

A long microscope at the eye-end of the telescope enables the observer to read or set the declination circle to any reading without leaving his seat, the vernier and arc of the circle being illuminated by the same lamp which lights the field of view.

At the eye-end of the telescope is a position circle, and the instrument is provided with a complete battery of eye-pieces, including a double micrometer and transit eye-pieces, with various powers, Huyghenian eye-pieces ranging up to 660, and total and first surface reflection prisms.

There has also been added since a fine universal automatic six-prism spectroscope, by Browning, with an arrangement for reversing the rays so as to give a dispersive power ranging from two to twelve prisms.

A time ball at the Semaphore, about nine miles distant, is dropped daily at 1 P.M. by voltaic current from the Observatory. The ball is on the top of a high tower, so that it is visible to the shipping in the inner harbour at Port Adelaide, and in the roadstead outside in the gulf.

Meteorological observations are made daily at 9 A.M., 12 noon, 3 P.M., 6 P.M., and 9 P.M., and comprise readings of barometer, dry and wet bulb thermometers (including maximum and minimum temperatures during the 24 hours), solar and terrestrial radiation, direction and force of wind, rainfall, evaporation, ozone, amount of cloud, and general character of the weather. The temperature of the soil is also ascertained by mercurial thermometers, whose bulbs are respectively 8, 5, and 3 feet beneath the surface.

The barometer by Adie of London is fixed in the transit-room, the cistern being about 140 feet above the sea-level. The internal diameter of the tube is 0·5 inch. The zero of the brass scale (silvered) is an ivory point to which the surface of the mercury in the cistern is adjusted before reading, and by means of the vernier the scale can be read off to 0·002 inch.

The thermometer, including the dry and wet bulb, and self-registering instruments, are mounted about 5 feet 6 inches from the ground on an improved form of the Greenwich stand, modified to suit the climate, the instruments being well protected from the sun and rain and screened from the sky, but otherwise fully exposed to currents of air, the stand being at some distance from any building.

A corresponding set of instruments were mounted in 1869 in an octagon-shaped wooden structure, 10 feet in diameter, with wide open lattice walls, 5 feet 9 inches high, surmounted by a conical louvre roof, carried to a height of 13 feet, with a rain-gauge at the top, the standard rain-gauge being on the ground. The building is floored with planks, and the whole is well painted white. The instruments are fixed a little over 5 feet above the floor on a skeleton frame of wood, supported by a stout post securely planted in the centre of the building. A similar thermometer stand was adopted at the Sydney Observatory, and with some modifications seems well suited to a hot climate--perhaps better suited than the Greenwich stand—and, in the opinion of the writer, is certainly to be preferred to the double louvre box designed by Mr. Thomas Stevenson of Edinburgh, and adopted by the Scottish Meteorological Society. Sudden fluctuations of temperature are, however, not so readily or so quickly followed or indicated, and the thermometers as a rule lag behind those on the Greenwich stand.

The solar radiation thermometer—which is, as are nearly all the other self-registering instruments, of Negretti and Zambra's make, having a black glass bulb enclosed in an exhausted glass tube—is held about 5 feet from the ground by two light wooden arms screwed on to a stout post planted in an open space of ground.

The ground thermometers, made by Grimoldi of Melbourne, are placed vertically in a wooden trough filled with earth, and buried so as to have the bulbs respectively 8 feet, 5 feet, and 3 feet beneath the surface of the ground, the upper part of the scales being about a foot above and enclosed in a cupboard painted white.

The rain-gauges are of Glaisher's form, having a circular receiving surface 8 inches in diameter, the gauge being placed on the ground on a clear space, where it is wholly unsheltered in every direction. There are three gauges—two being on the ground, and the third on the top of the thermometer house before mentioned.

The evaporation is ascertained in the following manner:—The atmometer, or evaporation tank, consists of a large box made of well-seasoned red gum, lined with zinc; the box is 4 feet square, and 3 feet 6 inches deep, and is sunk in the ground to a depth of 3 feet, and is kept filled with water to within 3 or 4 inches of the top. The height of the water-level is measured every morning at 9 A.M., thus —A stout brass bar is placed diagonally over one corner of the tank, resting horizontally on two iron plates; at right angles to this bar is a vertical graduated rod, movable by rack and pinion, and read by means of a fixed vernier to 0·01 inch. The lower end of the rod is pointed, and is carefully set to the water-level in a 2-inch tube fixed in the tank, the tube being perforated at the bottom. A perfectly smooth surface is thus obtained, even in the highest winds. A rain-gauge by the side of the tank shows the rainfall received by the latter. A similar tank is placed at the waterworks reservoir, a sheet of water of twenty-seven acres, near the foot of the hills, 281 feet above the sea, and about six miles from Adelaide.

Similar, but less complete, observations are carried on at several of the telegraph stations in the Colony, including Port Darwin on the north coast of Australia; and also at the lighthouses. Rain-gauges have also been supplied to about seventy stations, which send in returns monthly.

Besides this, every telegraph office transmits to Adelaide a report on the state of the weather, &c., each morning at 9 A.M., and similar reports are received from the principal coast offices in the other Colonies. These reports are published daily at the central telegraph office.

Thus it will be seen that, on the completion of the telegraph to Western Australia, now in course of construction, the observer in Adelaide will possess the means of knowing the prevailing state of the weather each day nearly all round the sea-board of Australia, and over a great portion of the interior, information which, if rightly used and interpreted, cannot fail to be most useful. The stations on the overland telegraph,

from Adelaide to Port Darwin, are especially serviceable in determining the southerly march of the north-west monsoon, which prevails on the north coast from towards the middle of November to March, and occasionally extends its influence in heavy thunderstorms right across the continent.

What has been said will serve to show that the Observatory is performing useful work. Unfortunately its operations have been crippled, and the periodical publication of returns has been stopped for want of adequate assistance, the Government Observer, in addition to the onerous official duties of Post-master-General and Superintendent of Telegraphs, having been called away for lengthened periods to secure the successful completion of the overland telegraph, a national undertaking of vast importance, which has been referred to in a previous portion of this hand-book. Recently, however, an assistant observer, Mr. Alexander Ringwood, and a cadet have been appointed.

With this augmentation of strength it is proposed shortly to take up fresh work, and introduce improved systems of observation. The present transit instrument will be replaced by a transit circle, having a six-inch object glass, and thirty-inch circle. It is also recommended that photographic registrations of the variations of the barometer temperature and humidity, on the same principle as that adopted at Kew and Greenwich, shall be introduced; and in view of the great importance of possessing reliable statistics of the average maximum and minimum rainfall at different places, as affording a clue to the law governing its distribution and annual fluctuations, the Government, at the instance of the Astronomer, have sanctioned the issue of rain-gauges to persons residing in selected localities who may be willing to take charge of them and undertake to furnish regular returns to the Observatory.

In view of the real wants of a young community, the Government Astronomer is anxious to turn the Observatory to account in the promotion of high-class education, by the delivery at the Observatory of lectures on the physical sciences

to students, and in a recent official report to the Government he remarks :—"With regard to the special work and object of the Observatory as a public institution, it would, I think, be well to bear in mind that the Observatory is required not so much for the furtherance of astronomical science—for which there is, perhaps, ample and better provision elsewhere—as for educational purposes, as an important adjunct to our university and higher class schools for both sexes. It will, of course, have its regular work such as I have described, and it will be able to render valuable aid in those fields of astronomical research which do not involve continuous observation or heavy computations—such work, in fact, as may be safely left to observatories like ours, which do not possess a large staff of official observers. We could take up, among other things, solar and stellar spectroscopy, sun spots, double stars, and, what the Astronomer Royal, Sir G. B. Airy, has pointed out as a great want, observations of occultations, eclipses, and transits of Jupiter's satellites. On these we may be usefully employed, but beyond this I must confess that I am more anxious to see our Observatory popularised as a school of physical science, at which regular courses of lectures should be delivered on practical and physical astronomy, navigation, meteorology, magnetism, electricity, heat, light, and optics. In naming this list of subjects, taking so wide a range of cognate sciences, I need hardly say that, with my other duties as the director of so large a department of the public service as the Post Office and Telegraph, especially too after so long a residence in the Colony, it would be impossible for me to attempt to carry out even a tithe of what I have ventured to indicate as the best way of utilizing the Observatory in the promotion of high-class education; but I could continue to direct the operations of the observatory, and collect together the apparatus required for lectures and other purposes."

Having described the Observatory and its operations, it remains to say a few words in respect to the climate. Here as elsewhere the weather is a fertile subject for conversation, and people whose avocations are affected by its changes are never

tired of talking about it—at one time in terms of praise, at another in terms of complaint; but what, perhaps, would most strike a visitor from colder and more humid climates, is the fact that people here never complain of rain; on the contrary, a wet day is generally announced by such expressions as "Splendid rain to-day, I hope it is general;" "What fine rains we are having, they extend well north;" and they only who know what it is to have consecutive weeks, and in some parts many months, of unclouded sky and hot sun can appreciate the real luxury of rain. Our climate, beautiful as it really is, affording as it does a greater number of pleasant days on which outdoor pursuits can be carried on with buoyancy of spirits, one must confess is a wee bit dry, a fact which vegetation on the plains during our summer season sufficiently attests. The clearness or transparency of the atmosphere is something wonderful, and owing to its dryness the heat, except on hot-wind days, is seldom oppressive unless one is lazy. Cricket matches are played with the usual enthusiasm before crowds of spectators with the thermometer ranging between 90° and 100° in the shade, and the writer has ridden fifty miles in the day with the temperature as high as 110° without much inconvenience or distress—the secret of which is that these high temperatures are always accompanied by such an extreme dryness of the air that perspiration affords instantaneous relief. When a fierce hot wind is blowing, and the thermometer stands perhaps at something over 100°, the wet bulb thermometer will show 65°, and it is this which enables persons to bear the heat of our summer and carry on their usual pursuits with less inconvenience and discomfort than is felt in tropical and damp climates, though the temperature may be 15° or 20° lower, but nearly saturated with aqueous vapour, as at Port Darwin, where during the rainy season of the north-west monsoon, the thermometer may stand at only 88°, whilst the wet bulb at the same time indicates 86°. Such an atmosphere, we need hardly say, is far more enervating than the hot and dry air of the Adelaide plains.

The observations at the Observatory satisfactorily represent

the climate of the plains for some distance north and south of Adelaide, but on the Mount Lofty Ranges close by the citizens in an hour or two find a much lower temperature, and twenty minutes by railway carries them to the invigorating breezes of the gulf; and except when kept back by strong easterly and northerly winds, the sea breeze usually sets in soon after 10 A.M., and sweeps across the plains, tempering the heat during what would otherwise be the hottest hours of the day.

The hottest months in the year are December, January, and February, when the temperature on the plains frequently exceeds 100° in the shade. November and March are also hot; but the nights, especially in the former month, are cooler, and the heat is seldom of long duration, rarely reaching 100° in the shade, and, coming in suddenly with a strong hot wind, is followed quickly by a change to cool or even cold weather. A few hot days occasionally occur in October, but even in the hottest months, especially in December, the weather is often broken by cloudy, cold intervals, with strong south-west winds, veering gradually to south and south-east. This state of things will continue for several days, during which the wind from the south-east will usually freshen towards sunset, a bank of cloud forming over the Mount Lofty Ranges with cold nights, the temperature falling rapidly after sunset. The duration of these south-easterly winds appears to depend upon the weather on the eastern coast; and the presence of the bank of cloud on the ranges, and the persistence and force of the wind, often indicate gales and rain on the coasts of New South Wales and Queensland, although the weather here may be fine and clear overhead. As the easterly wind moderates, it gradually hauls to the north, and alternate land (easterly) and sea (south-westerly) breezes set in with fine weather, getting warmer and warmer, till another spell of extreme heat is experienced. The heat is sometimes followed by rain, especially in the earlier part of the season, setting in with the surface wind light at north-east, but the upper current north-west. This is usually presaged by aggregations of cirro-cumuli, which close up into

a bank, with a hard sharply defined outline, gradually spreading over the sky, the clouds at the same time increasing in density as they change their character with scud forming beneath. The rain increases as the wind veers to the north-west, and often extends over a large area to the north, and is sometimes accompanied with heavy thunder and lightning, usually terminating with a gale from the south-west. The same thing occurs in the winter, but the wind at that season hangs longer about the west, often backing to the north-west with heavy rain and wind. These are usually our heaviest and most widely diffused falls, the rains from the south-west seldom extending far inland.

Regarding the summer as extending from October to March inclusive, the highest temperature recorded during the ten years 1865 to 1874 was 113·5 in January 1867, and the same in November 1865; and the lowest, 38·5, in October 1871. The highest reading in the sun during the same period was 164·0 in January 1870, and the lowest reading of a thermometer, with its bulb on wool placed on the ground, was 24·6, in October 1871. The monthly mean temperature is highest in January and February, being nearly equal in the two months, viz. 73·7 and 73·8 respectively. The mean temperature of December is about 71·4; March, 70·1; November, 66·5; and October, 62·5.

After March the temperature falls rapidly, very rarely reaching 90° in the shade in April (only six times in five years), the mean temperature for that month, deduced from ten years' observations, being 64·6, or 5·2 below that of the preceding month, whilst for May it is only 58·2. The weather during April and a great part of May is simply perfection, and the same applies to most of the winter and till the end of October. Although corresponding to the autumn or early winter of Europe, it is virtually spring when vegetation, refreshed by the first rains after the drought of summer, bursts into fresh life, and the whole surface of the land is clad with verdure. Heavy rains frequently fall in May, the largest recorded being 6·340 inches in 1851, the wettest year since records were commenced

by Sir G. S. Kingston in 1839, but the mean for the thirty-six years ending 1874 is 2·814 inches.

The coldest months are June, July, and August, the mean monthly temperature of which are 54·4, 51·5, and 53·7 respectively. The highest temperature recorded in those months during the ten years 1865–1874 was 80·0, in August 1865, and the lowest, 34·1, in August 1872. During the same period the solar thermometer reached 130·5 in August 1874, and the thermometer on wool fell to 24·6 in July 1873. At this season of the year the temperature during the day generally ranges between 55° and 70°, the latter being only occasionally reached, and falls on the average to about 45° in the night, sometimes much lower. These and May are usually our wettest months, the average quantity falling during this period, deduced from thirty-six years' observations (1839-1874), being 11·181 inches, the monthly averages being respectively 2·814, 2·915, 2·801, and 2·621 inches, for May, June, July, and August. The average number of wet days in these months for the same period was 13 days in May, 14 days in June, 16 days in July, and 16 days in August. The greatest number of wet days in any one month was 29 days in July 1861, on which the total fall was 4·082 inches, and in the following year there were 24 wet days, and 5·075 inches in the same month. The maximum quantity recorded in one month was 6·340 inches on 19 days in May 1851; 7·800 inches on ten days in June 1848; 5·380 inches on 17 days in July 1865; and 6·240 inches on 21 days in August 1852. The least quantity in the same months was 0·245 inches on 5 days in May 1839; 1·138 inches on 9 days in June 1844; 0·726 inch on 12 days in July 1859; and 0·675 on 3 days in August 1860. These quantities, of course, refer to the plains of Adelaide; on the hills and in the south-eastern portion of the colony the rainfall is much heavier. The following tables will sufficiently indicate the climatic characteristics of Adelaide during each month of the year :—

RESULT OF METEOROLOGICAL OBSERVATIONS MADE AT THE OBSERVATORY DURING THE TEN YEARS 1865–1874.

Months.	Barometer corrected and reduced to 32°.			Temperature.								Solar Radiation.		Terrestrial Radiation.	
				Dry Bulb.							Wet Bulb.				
	Mean, 9 A.M.	Highest.	Lowest.	Mean.	Maximum.	Minimum.	Mean Highest during the Day.	Mean Lowest during Night.	Mean Diurnal Range.	Average No. of Days Temp. exceeded 90°.	Mean Temperature of Evaporation.	Mean Highest in Sun.	Actual Highest in Sun.	Mean Lowest on Wool.	Actual Lowest on Wool.
January ...	29·813	30·152	29·245	73·7	113·5	47·1	86·4	61·0	25·4	10	61·6	135·2	164·0	53·9	38·5
February...	29·860	30·250	29·347	73·8	110·0	47·5	86·3	61·4	24·9	10	61·8	134·1	158·3	53·6	37·5
March ...	29·979	30·301	29·430	70·1	107·8	46·5	81·8	58·5	23·3	7	59·4	130·1	155·2	51·5	36·5
April ...	30·010	30·366	29·404	64·6	98·0	41·9	74·5	54·8	19·7	1	56·7	120·7	146·3	47·3	32·5
May	30·002	30·517	29·366	58·2	88·3	38 0	66·2	50·1	16·1	0	52·8	109·8	134·0	43·2	28·0
June ...	29·998	30·533	29·191	54·4	76·0	37·0	61·4	47·4	14·0	0	50·3	101·1	125·7	41·0	25·0
July ...	30·020	30·503	29·168	51·5	72·5	34·2	58·8	44·1	14·7	0	47·8	103·6	121·4	38·0	24·6
August ...	29·995	30·492	29·110	53·7	80·0	34·1	62·3	45·2	17·1	0	49·3	111·1	130·5	38·2	26·4
September	29·920	30·383	29·096	56·9	84·7	35·3	66·4	47·3	19·1	0	51·2	117·0	138·4	40·3	25·1
October ...	29·942	30·350	29·207	62·5	100·0	38·1	74·0	51·1	22·9	2	54·3	124·1	151·4	44·0	24·0
November..	29·880	30·304	29·223	66·5	113·5	40·9	78·7	54·3	24·4	4	57·0	129·9	160·5	47·2	29·2
December..	29·809	30·167	29·195	71·4	112·0	46·5	83·8	58·7	25·1	9	59·3	133·2	159·0	50·9	35·0
Year ...	29·936	30·533	29·096	63·1	113·5	34·2	73·4	52·8	20·6	43	55·1	120·8	164·0	45·8	24·6

RESULT OF THE MEAN MONTHLY RAINFALL AT ADELAIDE DURING THE THIRTY-SIX YEARS 1839–1874.

Months.	Mean.	Mean No. of Wet Days.	Greatest.	Least.	Mean Evaporation, Five Years.
	Inches.				Inches.
January ...	0·722	4	4·000	0·000	10·641
February ...	0·670	3	3·100	0·000	8·802
March	0·881	5½	3·753	0·000	7·608
April	1·760	8½	6·780	0·250	4·474
May	2·814	13	6·340	0·690	2·902
June	2·915	14	7·800	1·138	1·795
July	2·801	16	5·380	0·726	1·959
August	2·621	16	6·240	0·675	2·667
September ...	2·071	13½	4·640	0·711	3·427
October	1·739	10	3·834	0·460	5·981
November ...	1·203	5	3·550	0·100	6·979
December ...	0·894	5½	3·977	0·105	9·420
	21·091	114	—	—	66·655

From which the following hygrometric results are deduced:—

	Temperature of Dew Point.	Elastic Force of Vapour.	Degree of Humidity.
	Degrees.	Inches.	(Saturation = 100.)
January ...	52·8	0·400	48
February ...	53·0	0·405	48
March ...	51·1	0·377	51
April ...	50·2	0·363	60
May ...	47·9	0·335	67
June ...	46·3	0·313	74
July ...	44·0	0·289	77
August ...	45·0	0·298	73
September ...	46·0	0·310	66
October ...	47·3	0·326	57
November ...	49·3	0·352	54
December ...	50·1	0·362	47
Year ...	48·3	0·338	60

For purposes of comparison, the following table gives the mean temperature at Adelaide, Clare, Mount Barker, Mount Gambier, and Robe; also the maximum and minimum for the year 1874.

Months.	Adelaide.			Clare.			Mount Barker.			Mount Gambier.			Robe.		
	Absolute.		Mean.	Absolute.		Mean.	Absolute.		Mean.	Absolute.		Mean.	Absolute.		Mean.
	Min.	Max.		Min.	Max.		Min.	Max.		Min.	Max.		Min.	Max.	
January ...	51·6	111·0	74·4	48·0	110·3	74·6	41·0	109·5	67·7	45·0	101·0	65·2	49·2	98·2	66·3
February ...	50·2	102·3	69·9	45·0	98·2	70·0	40·7	100·0	64·0	43·8	94·0	62·3	46·8	86·2	62·8
March ...	48·0	100·0	67·4	45·0	94·8	65·4	41·5	97·0	61·3	41·0	90·0	60·4	46·5	82·2	62·2
April ...	47·0	90·0	66·4	40·0	88·5	64·3	33·8	90·0	60·2	35·5	84·0	59·0	45·0	79·3	61·3
May ...	41·5	72·6	56·8	37·0	73·8	51·4	32·8	72·0	52·1	32·0	72·4	55·2	40·2	68·6	56·3
June ...	38·1	67·2	52·7	35·0	65·4	49·5	31·5	67·0	48·0	31·2	65·0	51·3	40·1	61·4	52·4
July ...	34·2	64·6	49·4	28·0	63·8	47·2	29·0	60·0	44·7	31·0	63·8	49·5	37·0	59·8	49·1
August ...	36·0	75·0	52·3	31·0	74·0	48·9	30·0	72·0	43·4	30·0	70·5	49·6	36·8	66·9	50·8
September ...	38·1	70·1	53·5	33·0	67·0	51·5	32·5	67·0	49·6	30·8	71·0	51·7	41·3	62·6	53·1
October ...	40·5	94·1	62·8	38·0	87·0	62·0	32·0	90·5	57·8	33·3	91·0	58·0	42·1	75·0	58·8
November ...	43·2	91·1	64·1	39·0	96·0	63·8	34·3	88·5	59·6	37·6	83·0	57·8	45·0	77·2	60·0
December ...	48·2	103·5	72·2	43·0	105·0	68·1	42·0	102·0	64·8	41·0	95·0	62·6	47·2	92·0	62·8
Year ...	34·2	111·0	61·8	28·0	110·3	59·7	29·0	109·5	56·1	30·0	101·0	56·9	36·8	98·2	58·0

From the foregoing it will be seen that the barometer is highest during the winter months, when the air in the interior is cold and dense, and winds set towards the coast; and lowest during the summer, when the atmosphere in the heated interior becomes rarified, and the winds have a general set inwards from the coast, the monthly means ranging from 29·809 inches in December to 30·020 in July. The mean reading for each quarter for the decennial period was—

1st Quarter	January, February, March	29·884 inches.
2nd Quarter	April, May, June	30·003 inches.
3rd Quarter	July, August, September	29·978 inches.
4th Quarter	October, November, December	29·877 inches.

or for

Six summer months	29·880 inches.
Six winter months	29·991 inches.

The highest reading during the ten years was 30·533 inches, in June 1873, and the lowest 29·096 inches, in September 1867. The fluctuations of the barometer are greatest during the winter months, as shown by the following table, which exhibits the range of the barometer in each month during the ten years 1865 to 1874, the greatest range in any one month being 1·379 inches, which occurred in August 1870, and the least range, 0·474 inches, in January 1865.

RANGE OF THE BAROMETER IN EACH MONTH DURING THE TEN YEARS 1865–1874.

Months.	1865.	1866.	1867.	1868.	1869.	1870.	1871.	1872.	1873.	1874.
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Jan. ...	0·474	0·547	0·736	0·536	0·579	0·877	0·589	0·802	0·521	0·666
Feb. ...	0·719	0·716	0·754	0·788	0·573	0·575	0·614	0·637	0·674	0·590
March	0·642	0·761	0·642	0·597	0·766	0·510	0·539	0·477	0·662	0·792
April...	0·693	0·631	0·690	0·958	0·665	0·663	0·549	0·735	0·709	0·559
May ...	0·818	0·929	0·741	0·669	0·727	0·960	0·834	1·032	0·840	1·060
June...	0·722	0·904	0·794	1·097	0·794	1·037	0·728	1·116	1·084	0·950
July ...	1·231	0·777	0·964	1·019	0·801	0·721	1·145	1·057	0·836	0·725
August	0·894	1·088	1·113	0·827	0·748	1·379	0·768	1·067	0·828	0·849
Sept. ...	0·662	0·843	1·125	0·853	0·759	0·691	0·942	0·583	0·769	0·944
Oct. ...	0·889	1·079	0·916	0·686	0·957	0·943	0·818	0·808	0·762	0·798
Nov. ...	0·715	0·725	0·831	0·692	0·794	0·682	0·740	0·702	0·553	0·698
Dec. ...	0·807	0·685	0·540	0·598	0·816	0·808	0·729	0·681	0·914	0·738

The mean, the greatest, and least range of the barometer deduced from the foregoing table is as follows:—

	Mean Range. Inches.	Greatest Range. Inches.	Least Range. Inches.
January ...	0·6317	0·802 in 1872	0·474 in 1865
February ...	0·6640	0·788 in 1868	0·573 in 1869
March ...	0·6388	0·792 in 1874	0·477 in 1872
April	0·6852	0·958 in 1873	0·549 in 1865
May	0·8610	1·060 in 1874	0·669 in 1868
June	0·9226	1·116 in 1872	0·722 in 1865
July	0·9276	1·231 in 1865	0·721 in 1870
August ...	0·9561	1·379 in 1870	0·768 in 1871
September ...	0·8171	1·125 in 1867	0·662 in 1870
October ...	0·8656	1·079 in 1866	0·686 in 1868
November ...	0·7132	0·831 in 1867	0·553 in 1873
December ...	0·7316	0·914 in 1873	0·540 in 1867

The barometer usually rises as the wind, except in the case of mere local land and sea breezes, veers from north-west round by south to south-east, where it attains its maximum, falling as it goes gradually round by north to north-west, where it reaches its minimum. In the winter gales, when the wind clings to west and backs to north-west, the barometer falls, and bad weather may be looked for; and in the summer, when it holds to the north-east, with a falling barometer, a hot wind is certain.

Sir G. S. Kingston, the Speaker of the House of Assembly, whose experience of the colony extends from its first settlement in 1836, and who has kept with scrupulous care a record of the rainfall since the beginning of 1839, speaking of weather prognostics in an elaborate parliamentary paper on the rainfall of Adelaide, remarks that—

"The heaviest rains throughout the year may be expected with a wind at about north-east, the rain then commencing to fall gently and the wind light, both gradually increasing as the latter veers round to the north, and thence to the north-west, when the violence of both rain and wind has much increased; after this the wind may be expected to draw round to the west with still increasing violence, till the wind has got to the south of west, when the rain generally ceases, or at least rarely falls, except in heavy squalls and showers, and the weather clears up. The time occupied by a continuous fall of rain, as thus described, rarely exceeds twelve hours. The wind will, however, frequently hang at about west, with a few points' variation to the south

and north, for some days, during which period rain occurs in showers if to the south, and more steadily in proportion to the northing of the wind. The heaviest rains, assuming a tropical character, may be expected after a hot north-east wind, drawing round to the north-west, at which point an inch of rain and upwards has often fallen within the hour, accompanied with heavy thunder and lightning; or, as in October 1854, the rain is represented by tremendous hailstorms, the hail assuming the form of flat pieces of ice.

"As regards the use of the barometer in forming a judgment on the weather to be expected, I have to observe that the barometer invariably begins to fall with a north-east wind, continuing to fall as the wind increases in violence, and draws round by the north, north-west, and westerly, at and about which point it reaches it lowest figure; the barometer immediately begins to rise rapidly with the least southing in the wind. Now, although a low barometer thus agrees with the heaviest fall of rain, it is impossible to draw any accurate conclusions from it as to certainty of rain or otherwise; unless, indeed, when the wind is violent, as then, even with every appearance of heavy cloudy weather, rain rarely occurs. Calm, murky weather, accompanied by a low state of the barometer, is the most favourable indication for rain.'

"I have frequently seen the barometer at its lowest point (as observed by me), 29·3, the wind blowing hard, accompanied by cloudy weather, when no rain has fallen. On the other hand, I have known some of the steadiest and most copious rains to occur with the barometer at 30·2 and falling, the wind light or nearly calm.

"I may add that, generally during the fine weather, a land and sea breeze alternates during the twenty-four hours. After sunset the wind generally blows from about south-east to east, dying away about daylight; and a light south-west wind springs up about 9 A.M.; but, failing to do so, the night wind towards morning draws round from east to north-east, by north to north-west, and west towards the afternoon; and, should it hang to the north of east, with a falling barometer, it is a certain precursor of a hot wind.

"It may not be uninteresting to add here that whereas Sydney was visited by tremendous storms and floods from the 19th to the end of July 1860, yet during that period the weather here was unusually fine for the time of year; that the barometer was, during all that time, above 30 inches, and very steady, oscillating slightly each day, its whole range not exceeding 0·2; the wind was very light from S.E. to N.E. and N.W., and that I did not record a drop of rain all that time—an unprecedented event at that period of the year."

It may be added that the changes or fluctuations of the barometer have almost invariably a progressive march, speaking roughly, from west to east, the maximum and minimum occurring in Western Australia, from two to four days in advance of Adelaide, where they are noted from 12 to 24 hours before Melbourne, and about 24 to 40 hours before Sydney and Brisbane.

The winds during the summer tend generally on all sides towards the heated interior, which may be roughly described as a vast plain broken by a few ranges, none of which are of any height or magnitude; on the south coast, the wind being S.E. and S., varied by occasional S.W. gales, following a hot wind from the N.E. and N.; whilst during the winter, as will be presently seen, N.E. and northerly winds preponderate. On the east coast it is S.E., E., and N.E., whilst further north and round the north coast the north-west monsoon, for some months before and after the summer solstice, presses down south with varying force, often making itself felt as far south as the MacDonnell Ranges on the southern edge of the tropics in the centre of the continent. North of the MacDonnell Ranges the winds at this the summer season are variable, S.E. and N.W. winds alternating with calms; and heavy electrical storms with rain prevail with increasing intensity northwards to the coast. South of the MacDonnell Ranges S.E. winds prevail during the greater part of the year, but in the summer they are often influenced by the N.W. tropical current, and then, veering to the N.E. and N., will sweep over South Australia as a hot wind, the birthplace of which seems to be, speaking approximately, somewhere about latitude 26°. Our

experience of the climate of the interior of Australia is, as yet, but limited, but the stations on the Great Overland Telegraph now furnish accurate daily reports of the weather, direction of wind, upper currents, and rainfall. These reports show that the prevailing wind, except during the middle of the summer, is S.E. I have long been of opinion that the southerly dip of the monsoon largely influences the climate of South Australia proper, as well as that of Victoria. In seasons of drought, or when the summer in the interior is dry, the north-west monsoon rains thin off, and barely reach the centre in occasional storms. But when the monsoon is strong, and blows well home, the tropical rains and thunderstorms will stretch right across the continent well into the northern country of South Australia to within about two or three hundred miles of Adelaide; and occasionally these tropical rains will reach the south coast. A wet season in the interior will probably coincide with a hot summer in South Australia and Victoria; whilst a cool summer, when strong polar currents keep the temperature down, and the south-east winds are powerful, will denote or coincide with a dry summer in the interior, and a weak N.W. monsoon. The winter rains of the south, it may be remarked, thin off about three or four degrees north of Adelaide, rarely penetrating to lat. 28°; and summer rains are not to be depended upon far south of the tropics. Between those parallels is a wide belt of five or six degrees having an uncertain rainfall, subject to droughts, very seldom getting rain during the winter, but mostly depending on summer thunderstorms, the frequency and intensity of which, it is not improbable, may be found closely to coincide with the magnetic cycle of eleven and a quarter years, which is believed to determine the frequency of auroræ, magnetic storms, and solar spots. This, of course, is only conjectural, and is not to be accepted till proved by increased experience. At present we have little or no data. It is, however, remarkable that Mr. Meldrun, the Government Observer at the Mauritius, has recently expressed an opinion that the cyclones of that latitude are found to coincide with the period or cycle referred to.

It may and very probably will be found to be that, while the wet summers in the north and interior taper off to a drought, each succeeding year as a whole becoming drier and drier, the drought will break up suddenly with a heavy downpour, and yet the electrical storms in regard to their frequency, and the seasons in regard to their general rainfall, may coincide more or less approximately with the so-called magnetic cycle.

Be this as it may, an idea of this possible coincidence, floating as it were in my mind, induced me, in 1870, to expect that we should have a continuance of favourable seasons in the interior for carrying out the overland telegraph, of which advantage should be taken; and it has strangely happened that, since the completion of that undertaking in 1872, up to which time the rains were ample, the summers have got gradually drier, and the drought has slowly extended southward. The last drought in the north was in 1865, when the country for hundreds of miles was a desert, bare of feed, and strewed with the bones of dead animals, the settlers losing many thousands of cattle and sheep. This was followed by a succession of good seasons, and in 1870, 1871, and 1872, copious rains fell over the whole of the interior. How far the drought of 1865 extended north, I have no means of knowing, as we had then no telegraph, and it was not till the beginning of 1874 that the rainfall was regularly recorded; but the seasons following 1872, south of 19° or 20° south latitude, became drier, and in 1875, and up to the present date, February 1876, very little rain fell between the 24th and 30th parallels, and even farther south. And the country north of Spencer's Gulf, especially on the east side of the Flinders Range, is now suffering somewhat from drought, which extends eastward to Queensland and New South Wales. But to be forewarned is to be forearmed. If man cannot alter the laws of Nature, a correct knowledge of them often serves to mitigate their effects where ignorance would invite disaster. Our large stockowners are not likely to suffer to the same extent in any future drought. Coincidently with this dry season in the north, the southern portion of the

Colony, embracing the whole of the agricultural districts, say south of Mount Remarkable, was favoured with rains throughout the year 1875 considerably in excess of the average.

The distribution of rain seems somewhat capricious, and places not far apart will often show a very different rainfall, where local causes are apparently insufficient to explain the large difference in the yearly average. Speaking generally, the average annual rainfall on the plains of Adelaide, west of the ranges, for about 100 miles north, is about 18 to 21 inches, the mean at Adelaide for the 36 years 1839 to 1874 being, as we have seen, 21·091 inches. On the Mount Lofty Ranges it is much more, the average at Mount Lofty for the 10 years 1865–74 being 40·677 inches; at Charleston, 32·981; Mount Barker, towards the eastern verge of the range, 29·906; Gumeracha, 32·269; whilst at Mount Remarkable, about 180 miles north of Adelaide, immediately round the Mount, it is 24·465 inches.

On the eastern side of the Mount Lofty Ranges, and along the valley of the Murray, the rainfall is less than on the Adelaide plains, being at Strathalbyn, immediately at the foot of the ranges, 18·652 inches. At Montura, on the plains about 10 miles to the east of the range, and near the northern shores of Lake Alexandrina, it is 15·876; at Goolwa, near the mouth of the Murray, 17·597; and at Blanchetown, one hundred miles in a direct line up the river, only 12·739 inches. In the south-east, at Robe (Guichen Bay), Mount Gambier, Penola, and Naracoorte, the average annual rainfall, deduced from the same period (10 years 1865–74), is 25·581, 30·599, 28·026, and 22·775 inches respectively. On Yorke's Peninsula it is less than at Adelaide, being only 13·016 inches at Wallaroo, and at the head of Spencer's Gulf, Port Augusta, it dwindles down to 9·218 inches.

The table on page 407 shows the mean rainfall and the greatest and least quantities registered in each month during the thirty-six years 1839-1874, with respect to which I would here explain that prior to 1857 I have availed myself of the valuable tables prepared by Sir George Kingston. As regards the monthly means, Sir George Kingston's results are nearly

identical with those I have given, but in some years there is a discrepancy in the totals which is probably due to heavy local showers and the effects of wind. Taking Sir George Kingston's figures, the rainfall exceeded the average in the following years :—

	Inches.	Days.		Inches.	Days.
1840	24·233	99	1858	21·522	107
1846	26·885	108	1861	25·187	129
1847	27·613	107	1862	22·844	114
1849	25·444	110	1863	22·915	131
1851	30·633	128	1870	24·100	132
1852	27·34	118	1871	23·505	122
1853	26·995	127	1872	23·155	130
1855	23·145	124	1873	21·595	114
1856	24·021	118			

In 1875 the rainfall exceeded the average, the quantity registered at the Observatory being 28·964 in 157 days, and 31·455 inches by Sir George Kingston.

The years in which the rainfall fell below the average were :—

	Inches.	Days.		Inches.	Days.
1839	19·840	102	1859	14·852	95
1841	17·956	93	1860	19·670	119
1843	17·192	104	1864	19·445	109
1844	16·878	136	1865	14·750	96
1845	18·830	124	1866	19·935	115
1848	19·735	114	1867	19·350	106
1850	19·504	88	1868	17·880	103
1854	15·346	105	1869	13·850	110

Sir George Kingston's tables show that the average yearly rainfall, arranged in periods of five years, was as follows:—

	Inches.		Inches.
1839–1843	19·907	1859–1863	21·093
1844–1848	21·988	1864–1868	18·276
1849–1853	25·983	1869–1873	21·241
1854–1858	21·038		

Or, divided into periods of seven years—

	Inches.
Average for seven years, 1839–1845	19·321
Ditto ditto 1846–1852	25·307
Ditto ditto 1853–1859	21·005
Ditto ditto 1860–1866	20·677
Ditto ditto 1867–1873	20·490

And—

	Inches.
Average for ten years, 1839–1848	20·940
Ditto ditto 1849–1858	23·510
Ditto ditto 1859–1868	19·828

The total rainfall in some years is unduly swelled by heavy storm rains falling during the summer; the rains which are most valuable to the agriculturist are those which fall in the months of April, May, June, July, August, September, and October. I have, therefore, shown in the following table the rainfall recorded during those months in each year, from 1839 to 1875, using the Observatory records after 1856.

Rainfall registered in Adelaide during the months of April, May, June, July, August, September, and October in each year, from 1839 to 1874, both inclusive :—

Years.	Rainfall in 7 months.	Years.	Rainfall in 7 months.	Years.	Rainfall in 7 months.
	Inches		Inches.		Inches.
1839	14·436	1851	25·608	1863	20·345
1840	17·315	1852	22·480	1864	17·237
1841	14·163	1853	24·437	1865	13·716
1842	15·683	1854	13·050	1866	17·195
1843	13·952	1855	17·090	1867	16·206
1844	13·818	1856	20·094	1868	16·084
1845	15·481	1857	12·678	1869	10·253
1846	19·295	1858	12·650	1870	18·567
1847	22·920	1859	11·647	1871	14·926
1848	15·700	1860	14·696	1872	17·152
1849	22·089	1861	17·508	1873	17·169
1850	11·644	1862	19·484	1874	15·180

Mean quantity of rain registered in the seven months, April, May, June, July, August, September, and October, for 36 years } 16·721 inches.

On this subject, Sir George Kingston, who has been a careful observer since the foundation of the Colony, makes the following valuable remarks in an elaborate report on the rainfall of the Colony, laid before Parliament last Session.

"A careful examination of the rain register tables has induced me to consider the year as divided into three distinct periods or seasons—thus, during the first four months of the year, namely, January, February, March and April, the average amount of rain is found to be 3·74 inches, or not quite one inch, per month. The next five months, May, June, July, August, and September, give an average amount of 13·361

inches, or 2·627 inches per month; while the last three months, October, November, and December, the rainfall may be expected to reach 4·004, or one and a third inch, per month. I am inclined to disregard the usual divisions of the year, and to call the five months, May to September, spring—during this period are carried on all the most important operations of the agriculturist and horticulturist, in sowing and planting. The three months at the end of the year, October, November, and December, I regard as the summer or harvest months—during these months, our grain crops are generally secured on the plains, except on rare occasions, and in the hills, where the harvesting of grain extends into January. The first four months of the year, January, February, March, and April, as in the old country, following on the harvest, form, to a certain extent, the autumn of this part of the world—the vineyards and orchards then yielding their produce; but, owing to the deficiency of rain, vegetation is very generally at a standstill. Want of moisture in the atmosphere, accompanied by intense heat, putting a stop to vegetation, and baking the surface of the ground, has a somewhat similar effect, in so far as agricultural pursuits are concerned, to that produced by the wet and frosts of the winters in England.

"With reference to the inferences to be drawn from these tables, as to the beneficial influence of the rainfall at any period on agricultural or horticultural operations, I must observe that a mere inspection of the tables is of little use in leading to just conclusions; the benefit of the rainfall depends, not so much on the quantity during a given month, as on the rapidity or otherwise of its fall, as well as the season of the year.

"During the months of January and February the ground is so hot that a fall of even half an inch in the twenty-four hours serves only to wash the dust off the trees, does not penetrate into the ground, and evaporates almost as quickly as it falls. The ground is then so dry and parched that nothing under an inch of rain at one fall, during these months,

is of much value to renew the exhausted energy of vegetation; while, from the end of April to September, the quantity of rain during the twenty-four hours is of little importance as compared with the frequency of its occurrence—keeping the ground constantly moist, and provided that the average of the monthly falls are fairly kept up, the ground is more benefited by the occurrence of numerous rainy days than by a great fall in any one day. However, there is no rule without an exception, and a heavy soaking rain of at least an inch is always to be desired towards the end of March or beginning of April, as, should the ground then get a good soaking, it will start the grass for the stockowners before the cold weather sets in; and the sun having then lost much of his power, the grass, when then well started, will not be burned up, as is the case after heavy rains at an earlier period of the year. On the other hand, to the agriculturist on the plains, heavy rains in February are beneficial, as enabling him to commence ploughing; while as regards the interests of the vinegrowers and proprietors of orchards, my opinion is, that so long as the rainfall of the year does not fall below twenty inches, the want of rain during January, February, and the early part of March, is not injurious to them, provided that copious rains have fallen during the months of November and December, so as to promote the growth of the plants and fill out the fruit, leaving it to be matured during the drier weather. Wines made during such seasons will, I imagine, be for superior to those made in years when the rainfall in January and February exceeds the average.

"The year 1860 affords a good illustration of the fallacious deductions that may be drawn from these tables, for, while the rainfall of that year is considerably below the average, also much less than in the years 1855, 1856, 1857, and 1858, the harvest is generally admitted to have been in excess of the average yield of those years.

"In attempting to account for this anomaly, I would remark that the rainfall of 1860 has differed greatly from that of preceding years in the intensity of its fall. That is to say, while

in former years I have recorded as much as three-fourths of an inch falling during a violent thunderstorm in less than half an hour, flooding the ground and rapidly escaping from the surface, the same quantity of rain this year has occupied many hours in its fall, so that the ground has been gradually soaked, and the greater part absorbed by the soil to a considerable depth. On the 4th of April, when the fall amounted to 3·15 inches (the largest quantity ever recorded by me in one day), the ground had been partially prepared for it by the rains in the middle of March; the rain fell gently and steadily, lasting, at intervals, the greater part of the twenty-four hours, and was nearly all absorbed. It will also be seen that the rain in the first six months of 1860 amounted to 12·769 inches, against an average of 10·028 inches for the same period, and the ground was thus thoroughly soaked to a considerable depth, and enabled the crops to stand the subsequent dry weather. On the other hand, the rainfall of the last six months was only 6·909 inches, or only little more than half that due to the period (11·923 inches). The drought at the end of July and up to the middle of August will, doubtless, be in the memory of many. Between the 17th July and the 19th August we were without any rain (0·002 inch, which fell on the 17th August, may fairly be considered as nothing). A similar drought for five weeks at that season of the year has not been observed, and the fears of the Colonists were justly aroused for the harvest; providentially, we had about three-fourths of an inch by the end of the month, 0·61 inch having fallen on the 21st August, and although each remaining month of the year shows a rainfall far below the average, a somewhat similar quantity of rain to that in August fell on different days of the month of September and October. The rains on these occasions were, as before remarked, gentle, continuing for several hours, soaking into the ground; and being followed by many days of cloudy weather, little or no evaporation took place, and the crops derived the fullest possible benefit from the limited quantity of rain."

The following table shows the rainfall at the under-men-

tioned places during the year 1875, and the approximate mean annual rainfall at the same places:—

Locality.	Rainfall in 1875.	Approximate Annual Mean.	Number of Years.
Adelaide Observatory	28·964	21·155	36
Adelaide—Sir G. S. Kingston ...	31·455	21·360	36
American River, Kangaroo Island	23·777	20·274	9
Angorichina	16·660	15·019	9
Auburn	29·340	24·024	10
Blanchetown	13·640	12·739	7
Brookside	—	22·279	8
Buchsfelde	23·940	—	—
Bungaree	26·837	20·433	8
Cape Jervis	18·127	—	—
Charleston	41·225	32·981	10
Clare	29·570	24·440	10
Clarendon	42·520	—	—
Collingrove	34·025	—	—
Edithburgh	11·993	—	—
Gawler	24·868	17·362	7
Georgetown	23·970	—	—
Goolwa	23·060	17·597	10
Gumeracha	48·330	32·269	6
Kanmantoo	19·370	—	—
Kanyaka	13·125	12·976	9
Kapunda	32·155	19·202	7
Kingston	29·920	—	—
Kooringa	21·780	19·367	9
Mannanarie	—	20·823	6
Mattawarrangala	11·400	13·458	7
Melrose	33·470	24·465	7
Meningie	22·300	19·113	10
Montura	18·833	15·876	6
Moonta	20·035	—	—
Mount Barker	38·123	29·906	10
Mount Gambia	34·194	30·599	10
Mount Lofty	55·410	40·677	10
Naracoorte	24·710	22·775	7
Normanville	24·495	19·905	7
O'Halloran Hill	35·867	22·871	10
Outalpa	9·529	12·290	7
Paringa	12·640	—	—
Penfield	21·970	—	—
Penola	39·770	28·026	10
Poonindie	21·000	—	—
Port Augusta	9·930	9·218	10
Port Elliot	26·666	20·813	8
Port Lincoln	23·830	18·909	9
Port Wakefield	17·135	—	—
Robe	28·380	25·581	10
Strathalbyn	21·893	18·652	10
Tanunda	31·350	21·156	6
Wallaroo	20·180	13·016	10
Willowie	19·740	—	—

Locality.	Rainfall in 1875.	Approximate Annual Mean.	Number of Years.
Willunga	34·370	27·204	10
Wentworth, New South Wales ...	13·290	15·884	6
Yankalilla	34·830	29·176	7
Yarroo	21·825	17·654	5
Palmerston, Northern Territory ...	56·500	63·252	6
Southport	56·835	—	—
Yam Creek	47·050	—	—
Pine Creek	49·840	—	—
River Katherine	45·993	—	—
Daly Waters...	35·529	—	—
Powell's Creek	22·830	—	—
Tennant's Creek	18·350	—	—
Barrow Creek	15·086	—	—
Alice Springs	15·276	—	—
Charlotte Waters	3·975	—	—
Peake	4·810	—	—
Strangways' Springs	5·238	—	—
Beltana	16·390	—	—
Blinman	20·829	—	—

Closely associated with the rainfall, and the relative humidity of the air, is the amount of evaporation from the surface. I have in previous pages explained the means taken to determine this, and in the table on page 407 I have given the mean amount of evaporation in each month of the year. The following table shows the actual amount of evaporation in each

MEAN AMOUNT OF EVAPORATION DURING EACH MONTH FOR FIVE YEARS, AT ADELAIDE.

Months.	1870.	1871.	1872.	1873.	1874.	Mean.	Mean Amount per diem.
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
January ...	11·390	8·832	10·726	10·739	11·518	10·641	0·353
February ...	10·955	7·901	8·145	7·928	9·083	8·802	0·314
March ...	8·650	7·310	7·846	7·708	6·527	7·608	0·245
April... ...	4·605	4·642	4·491	3·885	4·746	4·474	0·149
May	2·474	2·372	3·438	2·690	3·537	2·902	0·094
June	2·027	1·846	1·709	1·428	1·965	1·795	0·060
July	1·747	1·978	2·584	1·851	1·635	1·959	0·063
August ...	2·663	2·829	2·831	2·387	2·624	2·667	0·086
September...	3·481	3·928	3·779	2·914	3·035	3·427	0·114
October ...	5·322	5·741	5·878	7·125	5·839	5·981	0·193
November...	6·996	6·065	6·881	7·168	7·787	6·979	0·233
December...	9·000	8·495	8·515	10·805	10·287	9·420	0·304
Total per ann.	69·310	61·939	66·823	66·628	68·583	66·656	—

month and year during the five years 1871 to 1874, the mean for each month, and the mean daily evaporation in each month; from which it will be seen that the greatest evaporation takes place in January, when it ranges from about 9 inches to over 11 inches, the mean for the month being 10·641 inches, and the least in June, when it varies from about 1½ to 2 inches, the mean being 1·795 inches.

During the three hottest months the amount of evaporation per diem averages about one-third of an inch, as much as six-tenths of an inch sometimes being taken up on a hot-wind day, whilst in the coldest months it barely averages seven-hundredths of an inch a day.

With regard to the state of the sky, it will be sufficient here to state that during the summer months, November to March or April, there are about 15 to 20 almost wholly clear days in each month, March, April, and November being usually more cloudy than December, January, and February. In the winter months, May, June, July, and August, 10 or 11 wholly clear days may be expected, though it has happened in July that rain has fallen on 29 days.

The mean amount of cloud in each month of the year, taking the whole sky as 10, is approximately as follows:—

January	...	4	July	...	6
February	...	3	August	...	6
March	...	4	September	...	5
April	...	4	October	...	4½
May	...	6	November	...	5
June	...	6	December	...	4

The alternate land and sea breezes at Adelaide are of course local, being confined to within a comparatively narrow strip of coast line; their effect is to cause the wind in fine weather during summer, and occasionally in the winter, to complete an entire circuit of the compass in the twenty-four hours, the resultant direction for the year at different hours being—

At 6 h. A.M.	about	E.N.E.
9 h. „	„	N. by E.
12 noon	„	W. by S. to W.S.W.
3 h. P.M.	„	S.W.
6 h. „	„	S.S.E. to S.S.W.
9 h. „	„	S.E.

The resultant direction in different years at these hours shows remarkable fixity—thus in the four consecutive years 1860, 1861, 1862, and 1863, we have—

	1860.	1861.	1862.	1863.
	° ′	° ′	° ′	° ′
6 h. A.M. ...	S. 113 11 E.	S. 109 34 E.	S. 108 7 E.	S. 114 53 E.
9 h. „ ...	170 25	169 49	157 31	168 43
12 noon ...	284 55	283 38	279 10	276 10
3 h. P.M. ...	331 30	311 18	306 20	315 0
6 h. „ ...	30 0	4 22	348 2	333 0

The above results are obtained in the following manner:—

Let n be the number of times the wind has blown from any one direction, irrespective of velocity, and a be the angle which that direction makes with the meridian, measured from south round by east; then each direction may be resolved into its components, $n \cos a$, $n \sin a$ in the direction of the meridian and at right angles to it.

$$\text{Let } A = n \cos a + n' \cos a' + n'' \cos a'' + \&c.$$
$$B = n \sin a + n' \sin a' + n'' \sin a'' + \&c.$$
$$\text{Then } \tan \theta = \frac{B}{A}$$

where θ is the resultant direction of the wind, measured from south round by east.

Reducing the number of points to eight, and apportioning the intermediate points (S.S.E. &c.) equally amongst those next adjacent (S. and S.E., &c.) the following table shows the number of times the wind blew from the different points in each quarter of the year, commencing October 1873, and ending September 30, 1874:—

Direction.	October, November, December.						January, February, March.						April, May, June.						July, August, September.					
	6 A.M.	9 A.M.	Noon.	3 P.M.	6 P.M.	9 P.M.	6 A.M.	9 A.M.	Noon.	3 P.M.	6 P.M.	9 P.M.	6 A.M.	9 A.M.	Noon.	3 P.M.	6 P.M.	9 P.M.	6 A.M.	9 A.M.	Noon.	3 P.M.	6 P.M.	9 P.M.
S.	10	7	4	5	7	12	14	11	16	15	26	24	4	6	1	4	8	10	6	6	3	3	9	6
S.E.	15	10	4	9	18	30	27	20	13	13	25	34	16	2	4	3	8	7	4	2	1	0	0	6
E.	8	4	4	5	6	6	10	5	4	8	5	11	7	10	6	2	4	10	6	5	4	2	4	8
N.E.	28	24	11	7	1	11	18	9	8	2	3	2	43	34	13	11	12	12	53	40	12	10	11	12
N.	0	7	6	1	1	0	1	8	4	1	0	1	2	7	19	12	5	5	2	13	20	13	3	9
N.W.	7	8	13	8	3	1	4	4	5	0	0	0	2	0	8	9	4	6	4	5	11	11	9	7
W.	10	13	10	6	2	6	3	8	20	10	3	1	1	7	16	16	7	3	4	6	22	27	8	8
S.W.	15	20	40	54	48	25	13	18	22	38	25	6	7	7	14	25	15	7	13	10	15	24	19	5

From which it appears that the proportion of S. winds to N. winds, and E. winds to W., in each quarter, was—

			6 A.M.	9 A.M.	Noon.	3 P.M.	6 P.M.	9 P.M.
First Quarter ...	S/N	=	40/35	37/39	48/30	68/16	63/5	67/12
	E/W	=	51/32	38/41	29/63	21/68	35/53	47/32
Second Quarter ...	S/N	=	54/23	49/21	51/17	66/3	76/3	64/3
	E/W	=	55/30	34/30	25/47	23/48	33/28	47/7
Third Quarter ...	S/N	–	27/47	15/41	19/40	32/32	31/21	24/23
	E/W	=	66/10	46/14	23/38	16/50	24/26	29/16
Fourth Quarter ...	S/N	=	23/59	28/58	19/43	27/34	28/23	17/28
	E/W	=	63/21	47/21	17/48	12/62	15/36	26/20

Combining the Summer quarters (1st and 2nd), we have—

SUMMER—SIX MONTHS.

		6 A.M.	9 A.M.	Noon.	3 P.M.	6 P.M.	9 P.M.
S/N	=	94/58	86/60	99/47	134/19	139/8	131/15
E/W	=	106/62	72/71	54/110	44/116	68/81	94/39

And similarly the

WINTER—SIX MONTHS.

S/N	=	50/106	43/99	38/83	59/66	59/44	51/51
E/W	=	129/31	93/35	40/86	28/112	39/62	55/36

And for the Year—

S/N	=	144/164	129/159	137/130	193/85	198/52	182/66
E/W	=	235/93	165/106	94/196	72/228	107/143	149/75

It will thus be seen that during the summer months south winds largely predominate over north winds—especially in the afternoon and evening, northerly winds bearing a larger proportion about and shortly after sunrise, the prevailing direction during the night being E. to S.E. and S.W. during the day; while in the winter months N. and N.E. winds preponderate, except for a few hours in the afternoon, when local S.W. sea breezes often set in.

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TABLE No 1.—*Mean Reading of Barometer, corrected for Capillarity, and reduced to* 32°, *at* 9 A.M., 3 P.M., *and* 9 P.M. *for each Month, for Five Years* (1870-74), *at Adelaide.*

Months.	1870.			1871.			1872.			1873.			1874.		
	9 A.M.	3 P.M.	9 P.M.	9 A.M.	3 P.M.	9 P.M.	9 A.M.	3 P.M.	9 P.M.	9 A.M.	3 P.M.	9 P.M.	9 A.M.	3 P.M.	9 P.M.
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
January	29·776	29·728	29·750	29·799	29·741	29·782	29·747	29·668	29·702	29·859	29·796	29·841	29·811	29·768	29·833
February ...	·836	·730	·801	·737	·604	·717	·909	·846	·886	·852	·783	·820	·916	·843	·896
March	·996	·909	·963	30·055	·916	·959	·914	·847	·894	·985	·906	·963	·958	·889	·932
April	·934	·868	·911	29·996	·963	30·030	30·014	·963	30·003	·971	·914	·956	30·043	·975	30·029
May	·984	·913	·954	·955	·892	29·941	29·997	·938	29·981	·941	·892	·921	29·961	·893	29·954
June	·961	·894	·928	·954	·896	·949	·804	·741	·789	30·046	·993	30·049	30·034	·894	·916
July	30·016	·957	·994	·948	·901	·945	·921	·882	·922	·132	30·071	·098	·075	30·000	30·058
August	29·768	·716	·770	·948	·880	·922	30·065	30·004	30·047	29·970	29·903	29·956	29·899	29·842	29·858
September ...	·918	·890	·934	·955	·886	·931	·051	29·991	·035	·912	·854	·894	·815	·752	·790
October	·898	·835	·891	·959	·899	·945	29·929	·860	29·912	·912	·834	·899	·973	·909	·940
November ...	·903	·845	·890	·821	·766	·814	·820	·754	·812	·941	·876	·935	·870	·796	·852
December ...	·844	·803	·840	·802	·716	·785	·809	·749	·774	·826	·770	·798	·814	·766	·801
Means... ...	29·906	29·841	29·885	29·911	29·841	29·893	29·915	29·854	29·896	29·946	29·883	29·927	29·931	29·861	29·905

Table showing Mean Reading of Barometer for each Month for the Five Years 1870–74.

Months.	At 9 A.M.	At 3 P.M.	At 9 P.M.	Months.	At 9 A.M.	At 3 P.M.	At 9 P.M.
January ...	29·978	29·740	29·782	July	30·015	29·962	30·003
February ...	·850	·761	·824	August ...	29·930	·869	29·910
March ...	·982	·893	·942	September ...	·938	·874	·917
April ...	·992	·937	·986	October ...	·934	·867	·917
May ...	·967	·905	·950	November ...	·872	·807	·861
June ...	·960	·883	·925	December ...	·812	·767	·799

Mean Reading of Barometer at 9 A.M. for Five Years ... 29·921 inches
" " 3 P.M. " ... 29·856 "
" " 9 P.M. " ... 29·901 "

TABLE No. 2.—BAROMETER.—*Table showing the Highest and Lowest Readings of the Barometer in each Month for Five Years* (1870–74).

Months.	1870.		1871.		1872.		1873.		1874.	
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.
January ...	30 122	29·245	30·049	29·460	30·091	29·289	30·060	29·539	30·152	29·486
February ...	·150	·575	29·961	·347	·239	·602	·102	·428	·164	·574
March	·206	·696	30·208	·669	·132	·655	·301	·639	·222	·430
April	·206	·543	.356	·807	·281	·546	·245	·536	·280	·721
May	·460	·500	·349	·515	·398	·366	·277	·437	·470	·410
June	·304	·267	·316	·588	·307	·191	·533	·449	·367	·417
July	·348	·627	·313	·168	·299	·242	·370	·534	·349	·624
August	·489	·110	·245	·477	·461	·394	·254	·426	·254	·405
September ...	·239	·518	·293	·351	·300	·717	·246	·477	·188	·244
October... ...	·304	·361	·252	·434	·350	·542	·216	·464	·218	·420
November ...	·105	·483	·127	·387	·191	·489	·127	·574	·098	·400
December ...	·128	·320	·153	·424	·097	·416	·160	·246	·167	·429
YEAR	30·489	29·110	30·356	29·168	30·461	29·191	30·533	29·246	30·470	29·244
In what Month	August.	August.	April.	July.	August.	June.	June.	December.	May.	September.

TABLE No. 3.—*Showing Mean Temperature of each Month for Ten Years, also the Highest and Lowest Reading recorded per Month in same Period.*

Years.	January.			February.			March.			April.			May.			June.		
	Mean.	Highest.	Lowest.	Mean.	Highest.	Lowest.	Mean.	Highest.	Lowest.	Mean.	Highest.	Lowest.	Mean.	Highest.	Lowest.	Mean.	Highest.	Lowest.
1865	70·9	102·6	49·5	71·1	101·2	47·5	70·4	100·0	49·5	67·1	97·0	46·5	56·5	75·8	40·5	53·4	76·0	37·0
1866	75·2	109·5	52·0	77·0	108·5	50·5	70·3	105·0	47·0	65·6	98·0	45·3	60·4	88·3	45·0	54·7	67·0	38·0
1867	75·6	113·5	49·8	76·1	110·0	51·0	69·5	100·0	50·7	64·7	87·0	46·0	60·0	83·8	40·8	57·2	73·5	42·9
1868	69·5	102·0	48·9	73·3	105·2	51·1	74·1	107·8	51·4	64·0	84·6	44·7	60·4	80·9	40·4	53·8	69·0	37·9
1869	71·7	104·2	49·5	72·6	106·2	48·8	70·3	101·5	46·5	63·3	84·7	46·7	56·2	76·0	41·5	54·4	70·5	37·5
1870	74·0	111·8	50·2	77·6	109·3	52·2	71·2	91·0	51·0	65·7	89·2	41·9	57·2	76·3	38·0	54·9	66·2	40·5
1871	73·2	102·5	51·5	74·8	102·0	54·9	68·6	96·8	48·4	65·5	90·5	46·0	59·5	78·0	44·5	55·8	68·0	42·4
1872	78·4	110·3	52·5	73·8	101·3	53·0	72·1	105·0	48·0	62·4	83·3	45·1	56·1	72·1	40·6	54·0	66·5	38·7
1873	74·7	108·0	47·1	72·3	103·8	54·2	67·5	100·4	47·1	61·7	91·0	45·1	58·5	74·0	40·0	53·0	66·2	37·0
1874	74·4	111·0	51·6	69·9	102·3	50·2	67·4	100·0	48·0	66·4	90·0	47·0	56·8	72·6	41·5	52·7	67·2	38·1
Means ...	73·7	—	—	73·8	—	—	70·1	—	—	64·6	—	—	58·2	—	—	54·4	—	—
Highest ...	—	113·5	—	—	110·0	—	—	107·8	—	—	98·0	—	—	88·3	—	—	76·0	—
Lowest ...	—	—	47·1	—	—	47·5	—	—	46·5	—	—	41·9	—	—	38·0	—	—	37·0

Years.	July.			August.			September.			October.			November.			December.			Mean per annum.		
	Mean.	Highest.	Lowest.	Mean.	Highest.	Lowest.	Mean.	Highest.	Lowest.	Mean.	Highest.	Lowest.	Mean.	Highest.	Lowest.	Mean.	Highest.	Lowest.	Mean.	Highest.	Lowest.
1865	51·0	66·0	36·0	54·7	80·0	37·0	58·3	84·0	41·0	62·7	100·0	41·5	71·4	113·5	46·0	69·3	109·0	46·8	63 1	113·5	36·0
1866	52·9	66·5	37·8	54·7	78·0	37·2	56·7	80·0	40·0	61·6	100·0	41·8	64·4	98·0	43·9	71·8	105·5	48·3	64·0	109·5	37·2
1867	52·7	67·8	38·0	54·6	78·8	36·8	55·8	78·0	36·9	61·1	94·1	43·2	66·1	96·0	40·9	68·1	110·8	46·5	63·5	113·5	36·8
1868	50·8	67·4	34·5	52·8	74·4	39·9	58·3	80·0	40·7	64·2	96·8	41·2	68·5	99·5	49·6	71·8	110·6	49·7	63·4	110·6	34·5
1869	52·3	68·0	35·2	55·1	74·2	38·2	58·3	84·2	35·9	61·5	87·7	41·5	68·8	106·0	45·8	71·0	112·0	48·5	63·0	112·0	35·2
1870	51·3	65·6	36·5	52·7	65·6	40·3	55·2	75·3	37·4	62·9	89·4	42·0	64·3	99·0	44·5	71·5	103·4	49·4	63·2	111·8	36·5
1871	51·9	72·5	37·3	55·9	78·0	37·0	58·4	83·0	40·7	61·6	97·3	38·5	65·3	96·0	44·5	76·0	111·4	48·7	63·9	111·2	37·0
1872	51·7	67·4	39·5	49·7	66·3	34·1	57·0	80·0	40·7	62·5	89·2	38·1	69·5	99·6	46·1	67·7	98·0	48·2	63·0	110·3	34·1
1873	50·9	62·8	36·2	54·3	69·2	38·6	57·3	84·7	35·3	64·6	96·4	43·0	62·8	85·6	41·3	74·2	106·6	50·8	62·6	108·0	35·3
1874	49·4	64·6	34·2	52·3	75·0	36·0	53·5	70·1	38·1	62·8	94·1	40·5	64·1	91·1	43·2	72·2	103·5	48·2	61·8	111·0	34·2
Means ...	51·5	—	—	53·7	—	—	56·9	—	—	62·5	—	—	66·5	—	—	71·4	—	—	63·1	—	—
Highest ...	—	72·5	—	—	80·0	—	—	84·7	—	—	100·0	—	—	113·5	—	—	112 0	—	—	113·5	—
Lowest ...	—	—	34·2	—	—	34·1	—	—	35·5	—	—	38·1	—	—	40·9	—	—	46·5	—	—	34·1

TABLE No. 4.—*Mean Temperature of Evaporation, for each Month during Ten Years (1865–74), at Adelaide.*

Months.	1865.	1866.	1867.	1868.	1869.	1870.	1871.	1872.	1873.	1874.
January...	59·0	62·1	61·6	59·6	60·1	60·6	62·1	65·8	63·4	61·5
February	59·8	63·2	64·2	61·4	60·3	62·5	63·8	61·7	63·3	57·4
March ...	60·3	60·0	58·3	61·9	59·6	59·5	58·7	61·3	57·5	56·9
April ...	57·5	57·6	58·3	56·6	55·4	57·1	56·8	54·7	55·9	57·1
May ...	52·0	55·3	54·4	53·0	51·0	51·7	54·9	51·6	53·5	51·1
June ...	48·4	50·7	53·0	49·7	50·4	50·9	51·7	50·7	50·1	47·8
July ...	47·7	49·0	49·4	46·5	47·3	47·4	48·2	49·6	47·6	45·5
August ...	49·8	50·2	50·3	50·0	48·9	48·7	50·1	47·2	50·6	47·3
September	52·1	51·4	51·0	52·7	49·6	50·2	52·1	51·6	52·3	48·6
October...	53·6	54·2	54·2	56·2	52·3	55·8	52·9	54·2	56·0	54·1
November	57·8	55·2	55·1	60·2	56·6	55·7	56·8	60·6	59·7	52·8
December	57·4	58·5	56·8	61·2	58·3	59·6	62·8	58·0	60·7	59·7
Means ...	54·7	55·6	55·6	55·6	54·1	54·9	56·0	55·6	55·9	53·3

Mean temperature of evaporation for January (10 years)... ... 61·6
Ditto ditto February ditto ... ... 61·8
Ditto ditto March ditto ... ... 59·4
Ditto ditto April ditto ... ... 66·7
Ditto ditto May ditto ... ... 52·8
Ditto ditto June ditto ... ... 50·3
Ditto ditto July ditto ... ... 47·8
Ditto ditto August ditto 49 3
Ditto ditto September ditto ... ... 51·2
Ditto ditto October ditto ... ... 54·3
Ditto ditto November ditto ... ... 57·0
Ditto ditto December ditto ... ... 59·3

TABLE No 5.—*Mean Minimum on Wool for each Month during Ten Years* (1865–74), *also Lowest Reading recorded during same Period.*

Years.	January.		February.		March.		April.		May.		June.	
	Mean.	Lowest.	Mean.	Lowest.	Mean.	Lowest.	Mean.	Lowest.	Mean.	Lowest.	Mean.	Lowest.
1865	48·5	38·5	50·8	37·5	50·3	40·5	47·5	34·0	41·5	32·0	35·2	25·0
1866	52·6	40·0	52·1	41·2	50·7	39·0	44·8	34·0	46·0	39·0	40·7	25·2
1867	52·6	40·0	54·0	43·0	48·3	41·2	46·9	38·2	40·6	30·2	40·8	31·8
1868	50·0	42·0	51·9	42·3	53·7	41·6	47·2	34·0	42·0	28·0	41·6	29·3
1869	51·3	40·0	54·0	39·0	52·4	37·1	46·3	38·0	40·7	32·2	41·5	28·0
1870	56·6	43·0	59·0	47·0	54·9	45·5	51·8	34·4	45·8	31·5	46·1	33·0
1871	57·4	45·0	56·0	45·0	48·5	36·5	47·2	37·0	45·1	38·8	44·5	37·4
1872	58·5	44·1	55·9	44·4	54·6	40·4	44·7	34·5	43·7	33·7	41·7	30·3
1873	56·0	38·9	51·5	47·3	50·1	41·2	48·7	39·0	46·0	32·6	39·8	30·2
1874	55·8	39·2	51·2	41·2	51·3	37·2	48·1	32·5	41·1	33·5	38·6	30·2
Means	53·9	38·5	53·6	37·5	51·5	36·5	47·3	32·5	43·2	28·0	41·0	25·0

Years.	July.		August.		September.		October.		November.		December.	
	Mean.	Lowest.	Mean.	Lowest.	Mean.	Lowest.	Mean.	Lowest.	Mean.	Lowest.	Mean.	Lowest.
1865	35·9	26·5	37·0	27·0	40·1	28·8	40·8	31·0	46·3	33·0	46·7	35·0
1866	36·1	26·8	38·0	27·4	40·0	30·0	44·0	34·8	44·6	33·0	49·7	37·0
1867	40·7	29·2	38·1	29·0	41·6	30·2	46·4	33·8	45·2	32·0	50·6	38·4
1868	37·0	26·8	37·9	29·9	41·4	32·8	44·9	34·1	50·1	40·4	52·3	41·3
1869	38·4	27·0	40·5	29·4	40·4	26·5	44·4	33·3	52·2	37·3	54·1	42·0
1870	40·1	29·0	41·9	33·6	43·0	34·4	49·5	39·0	47·8	38·6	51·6	42·6
1871	42·2	34·6	39·7	32·2	40·9	30·1	41·0	24·6	46·5	32·3	52·3	35·8
1872	39·2	33·2	33·5	26·4	38·5	31·0	43·4	30·6	50·0	37·6	48·4	37·5
1873	36·5	24·6	38·9	28·6	38·3	25·1	43·6	32·0	44·1	29·2	51·8	37·3
1874	34·2	26·2	36·7	26·8	38·8	29·3	42·3	30·4	45·2	34·4	51·1	36·7
Means	38·0	24·6	38·2	26·4	40·3	25·1	44·0	24·6	47·2	29·2	50·9	35·0

TABLE No. 6.—*Mean Solar Radiation at* 9 A.M. *for each Month for Seven Years, also the highest Reading recorded in each Month during Ten Years*, 1865–1874.

Years.	January.		February.		March.		April.		May.		June.	
	Mean.	Highest.	Mean.	Highest.	Mean.	Highest.	Mean.	Highest.	Mean.	Highest	Mean.	Highest.
1865	—	152·6	—	157·0	—	147·5	—	143·2	—	122·0	—	121·0
1866	—	155·5	—	157·0	—	152·5	—	143·5	—	132·0	—	116·0
1867	—	155·5	—	152·2	—	150·0	—	138·7	—	123·2	—	121·6
1868	108·5	148·2	107·9	145·5	102·0	152·0	79·0	124·6	70·9	119·0	59·9	106·2
1869	103·7	144·6	98·2	141·6	91·1	141·0	77·5	125·4	67·3	120·3	61·6	114·9
1870	115·7	164·0	126·2	158·3	112·4	149·0	98·5	141·4	82·5	134·0	68·0	119·4
1871	113·5	152·4	117·7	152·2	111·1	143·6	99·0	140·5	87·0	127·5	71·3	119·6
1872	123·2	157·0	110·5	154·1	105·0	155·2	94·3	131·8	76·3	125·3	70·1	119·2
1873	117·7	157·0	112·2	154·0	106·0	151·0	90·6	140·0	78·9	120·7	71·9	117·0
1874	118·3	161·6	113·5	154·5	98·3	150·0	102·1	146·3	85·0	127·3	67·6	125·7
Means	114·4	—	112·3	—	110·9	—	91·6	—	78·3	—	67·2	—
Highest	—	164·0	—	157·0	—	155·2	—	146·3	—	132·0	—	125·7

Years.	July.		August.		September.		October.		November.		December.	
	Mean.	Highest.	Mean.	Highest.	Mean.	Highest.	Mean.	Highest.	Mean.	Highest.	Mean.	Highest.
1865	—	113·2	—	119·0	—	133·0	—	147·8	—	154·0	—	148·0
1866	—	113·8	—	128·5	—	127·5	—	147·2	—	148·8	—	153·0
1867	—	112·8	—	125·0	—	129·4	—	139·0	—	137·0	—	147·4
1868	58·8	106·6	64·1	112·2	77·8	123·5	96·3	135·7	99·6	137·6	104·7	146·6
1869	73·6	118·0	83·7	127·2	99·1	138·4	104·0	142·0	116·9	160·5	116·3	159·0
1870	70·0	121·4	76·9	128·5	85·7	131·2	105·4	141·2	106·5	156·2	111·3	154·5
1871	67·7	119·8	83·9	126·5	92·5	133·8	103·6	149·4	103·7	146·3	126·8	157·0
1872	70·2	118·5	75·4	120·0	96·6	133·2	101·2	139·0	108·5	151·0	108·3	149·0
1873	71·2	116·4	78·4	125·6	92·3	134·2	102·4	151·4	109·5	139·6	118·2	159·0
1874	73·1	119·0	85·3	130·5	90·3	130·0	109·9	147·0	110·5	143·2	113·6	157·5
Means	69·2	—	78·2	—	90·6	—	103·3	—	107·9	—	114·2	—
Highest	—	121·4	—	130·5	—	138·4	—	151·4	—	160·5	—	159·0

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Thomson R.

Warrego R.

Paroo R.

Culgoa R.

Barwon R.

Darling R.

Barrier Ranges

L. Bookla

Menindee

Errinundra

Fort Bourke

Port Macquarie

Musclebrook

Newcastle

Broken Bay

SYDNEY

Wollongong

Orange

Lachlan R.

R. Murray

Wentworth

Wagga Wagga

Murray R.

Albury

Echuca

Deniliquin

Tatiara

Border Town

Horsham

Lacepede B.

Kingston

Naracoorte

Penola

Mt Gambier

Guichen B.

Rivoli B.

Merino

Portland

Macdonnell Bay

C. Northumberland

Ararat

Castlemaine

Ballarat

MELBOURNE

Geelong

Cape Howe

C. Otway

Port Phillip

C. Schanck

Western Port

C. Paterson

C. Liptrap

Refuge Cove

Existing lines of Railway shewn thus ——

Proposed " " " " " .....

The portion shaded represents lands in the adjoining Colonies of Queensland, New South Wales and Victoria, the natural water drainage of which is into South Australia.

115 120 125 130 135 140 145 150 155

10 15 20 25 30 35 40

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F. Weller, lith.

PLAN
OF THE
SOUTHERN PORTION
OF THE
PROVINCE
OF
SOUTH AUSTRALIA
AS DIVIDED INTO
COUNTIES AND HUNDREDS
Showing
AGRICULTURAL AREAS
POST TOWNS, TELEGRAPH STATIONS,
MAIN ROADS AND RAILWAYS;
Compiled from
OFFICIAL DOCUMENTS
in the Office of the Surveyor General.

Scale
Miles 10 5 0 10 20 30 40 50 Miles

True North

Small Townships, Stations, &c. o
Postal Places ⊕
Telegraph Stations T
Railways
Main Roads
Other Roads and Tracks
Trig Stations △

Note. *Hills are not shown in this sheet.*

London, Sampson Low & Co

EDWD WELLER, LITHO. RED LION SQUARE

BSB Bayerische StaatsBibliothek
MDZ Münchener DigitalisierungsZentrum Digitale Bibliothek

Harcus, William

South Australia its history, resources, and productions

London 1876
H.as. 1613
urn:nbn:de:bvb:12-bsb11333314-0